Gifted Education and Talent Development

Student Services

NOVA SCOTIA
Education

Gifted Education and Talent Development

Website References

Website references contained within this document are provided solely as a convenience and do not constitute an endorsement by the Department of Education of the content, policies, or products of the referenced website. The department does not control the referenced websites and is not responsible for the accuracy, legality, or content of the referenced websites or for that of subsequent links. Referenced website content may change without notice.

School boards and educators are required under the department's Public School Programs' Network Access and Use Policy to preview and evaluate sites before recommending them for student use. If an outdated or inappropriate site is found, please report it to links@EDnet.ns.ca.

Gifted Education and Talent Development

© Crown copyright, Province of Nova Scotia, 2010
Prepared by the Department of Education

The contents of this publication may be reproduced in part provided the intended use is for non-commercial purposes and full acknowledgment is given to the Nova Scotia Department of Education. Where this document indicates a specific copyright holder, permission to reproduce the material must be obtained directly from that copyright holder. Cover photographs may not be extracted or re-used.

Cataloguing-in-Publication Data

Main entry under title.

Gifted education and talent development / Nova Scotia. Department of Education.

ISBN: 978-1-55457-377-6

1. Gifted children—Education—Nova Scotia. 2. Gifted children—Identification—Nova Scotia. I. Nova Scotia. Department of Education.

371.9509716 –dc21 2010

Acknowledgments

The Department of Education gratefully acknowledges the committee that developed *Challenge for Excellence: Enrichment and Gifted Education Resource Guide* (Nova Scotia Department of Education 1999), as well as the Challenge for Excellence Guide Revision Committee, for the creation of *Gifted Education and Talent Development.*

Clare Burley	Halifax Regional School Board
Lynn Crawford	Cape Breton Victoria Regional School Board
Daniel Demers	Department of Education
Heather Foote	South Shore Regional School Board
Don Glover	Department of Education
Dr. Meredith Greene	Annapolis Valley Regional School Board
Tim McClare	Halifax Regional School Board
Janet Phiefer	Halifax Regional School Board
Cindy Tully	Halifax Regional School Board

Special thanks to: Dr. Joseph S. Renzulli, Director of The National Research Center on the Gifted and Talented, for his invaluable contributions toward this document. The committee would also like to thank Dr. Rebecca Eckert, Neag School of Education, University of Connecticut, and Jeff Danielian, National Association for Gifted Children, Washington, DC, for their comments and suggestions on an earlier draft of this document.

Contents

Section 1: Introduction and Frequently Asked Questions 3
  Letter of Introduction by Joseph Renzulli 5
  Rationale 7
  Special Education Policy 8
  Guiding Principles of Gifted Education and Talent Development...... 9
  Frequently Asked Questions 10

Section 2: Glossary 17

Section 3: Definition and Identification 27
  Introduction to Gifted Education and Talent Development............. 29
  Giftedness Defined 31
  Identification and Assessment.. 35
  Appendices for Section 3 (3-1 to 3-15) 59

Section 4: Schoolwide Programming Options 85
  Schoolwide Enrichment.. 88
  Total Talent Portfolio.. 92
  Enrichment Events and Activities for Students 93
  Appendices for Section 4 (4-1 to 4-3) 95

Section 5: Classroom Programming Options......................................103
  Programming Guidelines.. 106
  Appendices for Section 5 (5-1 to 5-21) 133

Section 6: The Program Planning Process 191
  Stage 1: Screening and Identification 195
  Stage 2: Exploration of Instructional Strategies by Classroom Teacher(s) 195
  Stage 3: Referral to Program Planning Team Meeting 196
  Stage 4: Program Planning Team Meeting 196
  Stage 5: Individual Program Planning Development....................... 197
  Stage 6: Implementation of Individual Program Plan...................... 198

Stage 7: Monitoring Individual Program Plan.................................. 198
Stage 8: Review of Individual Program Plan..................................... 198

Section 7: Professional Development and Additional Resources 199
Professional Development on Gifted Education and Talent Development... 201

Section 8: Bibliography 205

Section 1

Introduction and Frequently Asked Questions

Section 1: Introduction and Frequently Asked Questions

Letter of Introduction by Joseph Renzulli

This guide, *Gifted Education and Talent Development*, is an excellent example of a theory-based and research-supported document that translates many years of research and development into practical procedures that schools can use to deliver challenging learning experiences to all students. The key to delivering these services in regular classrooms and in conjunction with an extended continuum of services is the orientation that the guide provides for differentiated curriculum, instruction, and assessment.

Individualized plans that take into account the full range of student characteristics—academic strengths, high levels of interest, learning styles, and preferred modes of expression—are the best way to respect the now universally accepted principle of using multiple criteria in the identification of students who can benefit from special services. Some of these services can and should be addressed through differentiation procedures offered in the regular classroom; but the continuum-of-services concept also means that special groupings, such as enrichment clusters based on high levels of common interests and unusually high levels of academic advancement, must also be part of a comprehensive talent-identification-and-development program. Individual mentoring and counselling services, curriculum compacting, special after-school and summer-program opportunities, a range of acceleration options, and guided independent studies ensure that high levels of talent development are possible for all students who require challenges above and beyond the regular curriculum.

A guide such as *Gifted Education and Talent Development* represents the hard work and careful thought of its developers. The challenge for such a guide, however, is for all educators in Nova Scotia to put it to work by co-operatively and creatively examining the ways in which the recommended procedures can be implemented in their schools and classrooms. The potential payoff for both a challenging and enjoyable learning experience for all of the students of the province is unlimited, and I am pleased and honoured to have had the opportunity to assist in the review of the document.

– Dr. Joseph S. Renzulli, Director of The National Research Center on the Gifted and Talented, a University of Connecticut Board of Trustees Distinguished Professor, and the Raymond and Lynn Neag Chair for Gifted Education and Talent Development

Rationale

An inclusive and quality education for all students in Nova Scotia is reinforced by the goals of the public school programs, the *Special Education Policy* (2008), and the *Racial Equity Policy* (2002) of the Nova Scotia Department of Education.

Public school programs in Nova Scotia are designed to help all students develop to their full potential cognitively, emotionally, physically, and socially and to help all students acquire the knowledge, attitudes, and skills needed to participate fully as contributing members of society. The provision of quality education includes providing programming and services for students with gifts and talents. Special Education Policy 1.3 identifies giftedness as one of the exceptionalities that may require program planning and services. It is important that schools identify and program for this segment of the school population.

Students exhibiting gifted and talented behaviours may be found within all races and come from varying national, ethnic, and aboriginal origins. They include people of various ages, colours, genders, socio-economic circumstances, sexual orientations, and religious beliefs and may have learning or physical challenges. Students with diverse gifts and talents express, or have the potential to express, their gifts and talents through a wide range of behaviours, abilities, interests, and personal characteristics.

Diversity within school populations challenges schools to organize a system of program planning and support to meet the needs of all students. "All partners in education must work together to provide a stimulating and supportive environment to assist individuals in reaching their full potential." (Nova Scotia Department of Education, *Public School Programs*, p. A-3) Program planning is as important for gifted students as it is for any other student with special needs. "Instructional strategies, materials, and resources must be adapted to meet the diverse needs and varying rates and patterns of learning of all students from elementary through senior high school." (Nova Scotia Department of Education, *Public School Programs*, p. B-5)

This resource is meant to provide educators with the framework, documents, and tools to support the provision of a continuum of appropriate programming and services for students with gifts and talents from grades primary to 12.

Special Education Policy

To support students with special needs, including students with gifts and talents, the Nova Scotia Department of Education has developed policies related to the governance, funding and delivery of special education programming and services in the province.

- Students for whom special education funding may be used include the following exceptionalities or combination of exceptionalities: cognitive impairments, emotional impairments, behavioural disorders, learning disabilities, physical disabilities and/or other health impairments, speech impairments and/or communication disorders, sensory impairments (e.g., vision, hearing), multiple disabilities, and **giftedness**. (Policy 1.3)
- School boards are required to provide an appropriate education for all students who reside within their jurisdiction who are of school age and who are enrolled in a public school. (Policy 1.5)
- Each school board shall develop and maintain a written policy and procedures to ensure that programming and services are designed, implemented, evaluated, and reviewed for students with special needs. (Policy 1.7)
- Each school board is required to provide appropriate programming for all students with special needs and must use allocated resources for this purpose. (Policy 2.1)
- Each school board is responsible for establishing a process of identification, assessment, program planning, and evaluation for students with special needs. (Policy 2.2)
- Each school board is responsible for ensuring that individual program planning teams are established at the school level to develop, implement, and monitor programming for students with special needs. (Policy 2.3)
- An individual program plan (IPP) based on the student's strengths and challenges will be developed and implemented for every student for whom the provincial curriculum outcomes are not applicable and/or attainable. (Policy 2.6)
- Transition planning is part of the individual planning process for each student with special needs. (Policy 2.7)

Guiding Principles of Gifted Education and Talent Development

- Gifted and talented students represent the diversity of society: race, gender, sexual orientation, ability/disability, education, geographic origin, age group, social class, family, religion, language, and ethnic group.
- Schoolwide enrichment to identify, develop, and support the existing or potential gifts and talents of students must be framed within the *Special Education Policy*, the *Racial Equity Policy*, and this resource guide.
- A continuum of enrichment programming and services, including transition planning, should exist for gifted learners from grades primary to 12. Appropriate program planning provides consistency for school boards and for students and their families.
- Enrichment programming and services must be designed to supplement, extend, and build on curriculum outcomes. Flexible groupings of students must be developed in order to facilitate differentiated instruction and curriculums.

Frequently Asked Questions

1. **How are students with gifts and talents identified?**
   Because giftedness is displayed in many ways, no one assessment tool or test will identify it. Identification should encompass several assessment and teaching strategies from the staff and samples of student work. (For more information, see Section 3: Definition and Identification.)

2. **Why do we provide enrichment opportunities?**
   Enrichment opportunities support comprehensive student learning. Public school programs in Nova Scotia are designed to help **all** students develop to their full potential cognitively, affectively, physically, and socially and to help all students acquire the knowledge, attitudes, and skills needed to participate fully as contributing members of society. The provision of quality education includes programs and services for students with gifts and talents.

3. **At what grade level does programming for students with gifts and talents begin?**
   Program planning for a student with gifts and talents begins at any grade when a need for enhanced or additional programming is identified. For example, the *Schoolwide Enrichment Model* (Renzulli and Reis 1997) provides opportunities and experiences whereby some students will be identified as requiring additional programming options in response to their demonstrated gifts and talents. (For more information, see Section 4: Schoolwide Programming Options.)

4. **Who identifies students with gifts and talents?**
   Teachers and/or school teams should identify gifted behaviours. This can be done by developing a student profile and using a variety of tools, to determine whether or not enhanced or alternative programming is needed to appropriately support individual student needs. (For more information, see Section 3: Definition and Identification.)

5. **How do I know that the student has met the outcomes and needs enrichment?**
   The identification process draws upon a variety of tools, including, but not limited to, observations, pre-assessments of outcomes, student portfolios, and student interests. (For more information, see Section 3: Definition and Identification.)

6. **How do schools ensure that all students have enrichment opportunities?**
   Although individual teachers provide enrichment at the classroom level, it is advantageous for schools to create an enrichment team. The purpose of this team is to identify and coordinate, with input from the students, a variety of learning opportunities across grade levels and disciplines. The *Schoolwide Enrichment Model* (Renzulli and Reis 1997) is a gifted-programming option that is congruent with Nova Scotia's education philosophy and policies. (For more information, see Section 4: Schoolwide Programming Options.)

7. **Who is qualified to teach gifted students?**
   All teachers are qualified to teach gifted students. Teaching students with gifts and talents follows the principles of good teaching; assessments **for**, **of**, and **as** learning; and differentiated instruction.

8. **What do I do when a parent or guardian tells me his or her child is gifted?**
   Ask the parent/guardian to give you details about the characteristics he or she has observed. (A sample parent/guardian information form is provided in Section 3: Definition and Identification, Appendix 3-6.) Inform the school administration of the conversation. Begin collecting data. Arrange for a follow-up conversation with the parent/guardian. If the student's programming needs are not being met, a referral to the program planning team is necessary.

9. **Who can help me develop programming for students with gifts and talents?**
   It is essential that schools plan for enrichment activities throughout the school year to offer a balance of learning opportunities. It is recommended that schools create an enrichment team to ensure the success of schoolwide enrichment. A program planning team may highlight the need for curriculum, instruction, and assessment to be differentiated effectively at the classroom level with a focus on gifted programming and strategies. (For more information, see Section 6: The Program Planning Process.) Curriculum consultants and coordinators, mentors, and other board and school staff can also assist teachers with program development.

10. **What steps does the school have to take to meet the needs of gifted and talented students?**
    Educators have an obligation to provide programs to meet the needs of all students. Schools should provide appropriate enrichment opportunities for all students as well as individual plans when needed, as per the program planning process. (For more information, see Guiding Principles of Gifted Education and Talent Development, p. 9, and Section 6: The Program Planning Process.)

11. **What is classroom differentiation for students with gifts and talents?**
    Differentiation is a proactive approach incorporating appropriate classroom-management skills, varied pedagogy, pre-assessment, flexible small grouping, access to support personnel, and the availability of appropriate resources. (For more information, see Section 5: Classroom Programming Options.)

12. **What is pull out and when do I use it?**
    Pull out is a planned service within the continuum of programming services for students with gifts and talents that cannot be provided within the regular classroom setting. It can be used to support programming for enrichment based on individual student strengths. It can also provide grade-level and cross-grade-level groupings of students with similar abilities and interests. Pull out should not be the sole means of enriching curriculum. (For more information, see Section 5: Classroom Programming Options.)

13. **How do I evaluate and assess student work?**
    Assessments must focus on the outcomes for the student. The process of collecting information about student learning should be considered as the student's program is being developed. Pre-assessment and ongoing assessment will provide important information for the teacher in order to provide appropriate enrichment opportunities. Employing a variety of appropriate assessments improves the reliability of the evaluation and can help to improve both teaching and learning. (For more information, see Section 2: Glossary and Section 5: Classroom Programming Options.)

14. **What websites can I go to for information on giftedness?**
    For websites related to gifted education and talent development, see Section 7: Professional Development and Additional Resources.

15. What do I do when a new student arrives who has been in a gifted or enrichment program?

Programming for enrichment should continue based on the documentation contained in the student's cumulative record. Although some specialists and services may not be duplicated, the program planning team should ensure that an appropriate program of learning is developed to support the student's strengths in his or her new environment. (For more information, see Section 6: The Program Planning Process.)

16. How do I recognize giftedness in ESL students?

English as a second language (ESL) students can exhibit gifted behaviours, but learning a second language may mask some of these behaviours. Gifts and talents should be addressed using the same process as for students who speak English as their first language. ESL students may already be in the program planning process, and their learning programs should also address gifted behaviours, when present. (For more information, see Section 3: Definition and Identification.)

17. I have heard the term "twice exceptional" when looking for information on learning disabilities and giftedness. What does this mean?

The term twice exceptional refers to students who's gifts and talents coexist with special needs. Students who are learning and/or physically challenged are often overlooked for enrichment or gifted programming because the symptoms of either the giftedness or the disabilities may overlap, making identification difficult. (For more information, see Section 3: Definition and Identification.)

18. How do I motivate a student to engage in enrichment programming?

Students become more engaged in learning when it captures areas of interest relevant to them. There are many ways to investigate student interests, including informal conversations, formal interviews, and checklists. (For more information, see Section 3: Definition and Identification.)

19. What is the role of resource teachers?

While there is differing nomenclature for resource teachers across the province of Nova Scotia, the qualifications, roles, and responsibilities are clearly outlined in *Supporting Student Success: Resource Programming and Services* (Nova Scotia Department of Education 2002). Resource teachers are an integral part of the program planning team and can assist classroom teachers in the development, implementation, and monitoring and reporting of adaptations and individual program plans (IPPs) for gifted students. (For more information, see Section 6: The Program Planning Process.)

20. **When is it necessary to engage the program planning process for students with gifts and talents?**
    A student is referred to the program planning team when his or her needs are not being met through adaptations already made in the regular classroom. The program planning process is the same for students with gifts and talents and follows the same steps used for any student with special needs. Within the stages there are considerations specific to gifted and talented students. (For more information, see Section 6: The Program Planning Process.)

21. **How do I document the program planning process for students with gifts and talents?**
    Documentation of a student referred to the program planning team will be the same as for any student with special needs. Notes from program planning-team meetings are filed in the student's confidential record. The student's cumulative record should contain evidence and supporting documents indicating that enrichment has been a part of the student's learning program. (For more information, see Section 6: The Program Planning Process.)

22. **What does a program planning team do once they receive a referral?**
    Upon receipt of a referral for enrichment, the program planning team will follow the same procedures and process as for any student with special needs. Providing appropriately complex and challenging programming should be a priority during this process. (For more information, see Section 6: The Program Planning Process.)

23. **Should I develop an IPP? When do I develop one?**
    An IPP is developed through the program planning process when outcomes are deleted, when outcomes adhere to the same general curriculum outcome (GCO) at a significantly different outcome level, or when new outcomes are added. (For more information, see Section 6: The Program Planning Process.)

24. **How do I document a student's growth?**
    There are several ways to document the growth of a student with gifts and talents. When an IPP is in place, it must be reviewed as outlined in the

Special Education Policy (Nova Scotia Department of Education 2008). Report cards should provide information on growth. A total talent portfolio may also provide valuable documentation. Cumulative records for students must contain information that directly relates to educational programming services and progress.

25. What documentation goes in a cumulative record?
The cumulative record should include adaptations, IPPs, information related to academic progress, curriculum-compacting forms, and any documentation that will assist in transitioning the student.

26. How can teachers support a student's transition from grade to grade and beyond?
It is very important that the student experience a smooth transition into school, from grade to grade, school to school, and school to community. Supporting documentation placed in a student's cumulative record will provide the receiving teacher with the prior and current learning programs provided for the student. Staff should also ensure that appropriate transition meetings are held to facilitate good communication between the sending and receiving staff. (For more information, see Section 6: The Program Planning Process.)

27. What do I include on a student's report card?
A student's report card formally documents his or her progress and development in relation to the outcomes of the public school programs. If a student has an IPP, the IPP report must include the progress and development in relation to his or her specific individualized outcomes and his or her annual individualized curriculum outcomes.

28. When do I accelerate a student, and what process do I follow?
In order for acceleration by subject or grade to occur, teachers and program planning teams should follow school board guidelines. A more detailed explanation of acceleration can be found in Section 5: Classroom Programming Options.

29. Is there PD available at the school/board level?
Professional development (PD) programs will vary by school board. Opportunities both at the school and board level, such as professional learning communities, staff meetings, mentors, grade-level team meetings, school accreditation, and school- and board-developed PD, can provide valuable learning opportunities for staff.

Section 2

Glossary

Section 2: Glossary

Adaptations

Adaptations are strategies and/or resources used to accommodate the learning needs of an individual student. (For more information, see *Adaptations*, Student Services Fact Sheet, Nova Scotia Department of Education, 2010.)

Advanced Placement

Advanced Placement is a challenging academic high school program that offers students an opportunity to study university-level courses; demonstrate their mastery of course material by taking an exam; and, in some cases, gain a university credit.

Assessment *for/of/as* learning

Assessment for/of/as learning is the act of collecting information on student progress and achievement by using a variety of tasks designed to monitor and improve student learning.

Formative assessment (Assessment *for* learning) is a planned process that elicits evidence of students' status and is used by the teacher to adjust the ongoing instructional procedures or by students to adjust their current learning strategies. Formative assessment is a process, not a test. It is done when instruction is modifiable for the purpose of guiding, showing growth over time, determining student needs, planning the next steps in instruction, and providing students with descriptive feedback. The new term used is "transformative assessment," to highlight a process, not a product. (Popham 2008)

Summative assessment (Assessment *of* learning) is not a test but an outcome. It occurs when instruction is no longer modifiable or when too much time has elapsed between the assessment and the feedback. It usually takes place at the end of a period of learning for the purpose of determining the extent to which learning has occurred. In assessment *of* learning the teacher assesses students' achievement of the outcomes in order to communicate statements about student learning to those outside the classroom.

Effective assessment improves the quality of teaching and learning. It can help students become more self-reflective and feel in control of their own learning (assessment *as* learning), and it helps teachers monitor and focus the effectiveness of their instructional programs. (Adapted from *Assessment, Evaluation and Communication of Student Learning Procedures*, Halifax Regional School Board, 2009)

Asynchrony

Asynchrony occurs when gifted children's intellectual, emotional, and physical rates of growth are out of sync—students may feel very vulnerable if they are not in an environment where it is safe to be different.

At risk

Students are at risk when they have physical, economic, linguistic, and emotional needs that go unmet, which prevents them from achieving their academic potential and could lead to underachieving or dropping out.

Authentic assessment

Authentic assessment is a process of evaluating student learning by using student portfolios, products, performance, or observation to replace more traditional measures such as tests and written assignments. This allows students to be evaluated for their individuality and creativity by using assessments that more closely resemble real-world tasks.

Bloom's Revised Taxonomy

Bloom's Revised Taxonomy is a classification system of thinking and reasoning developed by Benjamin Bloom that is a hierarchy of six levels describing thinking from the least to most complex.

Brainstorming

Brainstorming is an activity that is used to stimulate many creative ideas that are accepted without judgment or criticism and then evaluated. When done properly, brainstorming is characterized by fluency and flexibility of thought.

Challenge for Credit

Challenge for Credit is a process of seeking a high school credit by demonstrating that the learning outcomes of a particular course, as outlined in the *Public School Programs* and curriculum guide, have already been achieved by the student. It is applicable only to designated senior high school courses.

Cluster grouping

In a heterogeneous classroom, cluster grouping occurs when students with similar interests, needs, and abilities are clustered together for one or more specific learning experiences.

Concurrent or dual enrolment

Concurrent or dual enrolment provides students with the opportunity to take university or community college courses while enrolled full-time in high school. The purpose is to provide high school students with a wider range of rigorous courses. It can also refer to junior high students taking high school courses for credit.

Creativity

Creativity is a natural healthy human process that occurs when people become curious and excited about learning. It involves the development of unique and new ideas. Encouraging creativity in students allows for new ways of thinking about situations and new solutions to problems.

Curriculum compacting

In effect, teachers are "buying" time in the school day for gifted students. This is done by identifying what students have already mastered; proving it through ways such as testing, conferencing, or observation; and having them continue regular or enhanced learning activities in areas where work is still needed to meet expectations. Advanced learning experiences are then provided with material that will stimulate and enrich learning, such as individual projects in the student's area of interest or other enrichment opportunities.

Differentiation

Differentiation addresses the diverse range of learners in the classroom by tailoring instruction to meet individual needs. It provides greater options and challenges for those who need it. Most of the time, differentiation is about how you address an outcome or teach a concept over time. It is about flexibility and understanding your students well enough to be responsive to their needs. It occurs in classrooms where the climate is safe and inclusive and encourages collaboration, where the teacher and students need to understand their learning styles and strengths, and where a range of instructional and evaluation strategies are used and multiple representations are encouraged.

Enrichment

Enrichment consists of learning activities extending beyond the existing curriculum. Some components could include allowing students to search for new information, pursue personal interests, engage in creative assignments and in-depth activities, and take leadership roles. These activities may take place in the regular classroom or in a separate setting and may include schoolwide enrichment.

Gifted behaviours

Although no single criterion can be used to determine giftedness, students who demonstrate above average ability or creativity, or high levels of task commitment may exhibit gifted behaviours at certain times, under certain circumstances, and under certain conditions.

Independent study for credit

An independent study for credit is initiated and developed by a student with the advice of the teacher and is tailored to the needs, abilities, and interests of that student. It provides a means by which students can focus on, elaborate, or broaden their understanding in an area of interest not already provided by the public school program. When it has been successfully completed, the student will earn a high school credit.

Individual Program Plan (IPP)

For some students with exceptional abilities, advanced learning outcomes may need to be developed in the form of an IPP. An IPP is developed when designated learning outcomes are changed, or additional outcomes are developed, to meet the specific needs of the students. For students requiring extended challenges in order to meet their unique intellectual, artistic, creative, or leadership needs, a combination of programming strategies and options need to be considered by the program planning team.

International Baccalaureate

International Baccalaureate (IB) is a rigorous high school program that measures teaching and learning against an international standard (IB Diploma Programme). It meets the needs of highly motivated and academically oriented students. It helps build students' confidence in their learning and develop student capacity to think critically and understand other cultures or points of view. Schools must be approved by the International Baccalaureate Organization in order to offer the program.

Learning centres

Also called activity, theme, or interest centres, learning centres can be used to encourage independent learning or individual or small-group investigations, to reinforce or extend the regular program, and to identify or extend the interests of students.

Learning style

The way a person processes information or learns best is his or her preferred learning style. There are different approaches or ways of learning, such as visual, auditory, and kinesthetic.

Mentor

Matching a student with a community member, a parent/guardian volunteer, or an older student can be a very positive way to expand his or her knowledge in a field of interest. Mentors help students by sharing a similar interest, moving through material at a challenging pace, and exposing students to real-world situations in ways that are not always available in the classroom.

Multiple intelligences

Multiple intelligences is a theory of intelligence developed by Howard Gardner that represents ways of processing information and thinking, including linguistic, logical-mathematical, spatial (visual), bodily kinesthetic, musical, interpersonal, intrapersonal, and naturalist.

Talent development

To develop potential talents students should be exposed to and have the opportunity to connect with talent area(s) and have outlets to express their accomplishments. Talent development is fostered when the individual is provided with opportunities, resources, and encouragement within his or her interest areas.

Telescoping

Some students may not need as much time to cover the required curriculum and may be able to complete, for example, grades 8 and 9 mathematics courses in a single year. Their learning needs are assessed, and instruction is provided when needed. When the work has been completed, they have time for enrichment activities suited to their interests, needs, and readiness.

Thinking skills

The development and use of thinking skills is a key component of working with gifted students. Thinking skills include the following:

Convergent/divergent thinking

Convergent thinking involves combining different ideas, based on elements these ideas have in common, by using inquiry and logic. Divergent thinking involves tearing a topic apart to explore its various parts, seeking unique and creative solutions or answers.

Creative thinking

Creativity can be taught directly to students by encouraging fluency, flexibility, originality, and elaboration of answers. The use of open-ended or divergent questions and exercises such as SCAMPER and creative problem solving helps students develop these skills.

Critical thinking

Critical thinking is a process of actively and skilfully applying, analyzing, synthesizing, and/or evaluating information for the purpose of decision making. It includes seeing other points of view; using sound evidence; and seeking depth, breadth, and clarity.

Tiered assignments

Assignments are developed to meet the needs of a group of students functioning at different levels. Teachers can create tiered assignments by taking into consideration the students' academic achievements, learning styles, and strengths and interests.

Total Talent Portfolio

A Total Talent Portfolio is a tool used to systematically gather and record information about students' abilities, interests, and learning styles. The information is then reviewed and analyzed so the teacher can make appropriate decisions about providing opportunities for enrichment experiences in the regular curriculum, and have a shared decision-making process between the teacher and the student. (For more information, see *Enrichment*, Student Services Fact Sheet, Nova Scotia Department of Education 2010.)

Twice exceptional

The term twice exceptional refers to students whose gifts and talents coexist with special needs. Some gifted children are exceptional both because of their strengths and their limitations. These students may also have learning disabilities, attention deficit hyperactivity disorder, or other learning challenges.

Underachieving or underachievement

Underachieving or underachievement occurs when there is a discrepancy between a student's ability and his or her school performance.

Section 3

Definition and Identification

> "Do not train children to learn by force and harshness, but direct them to it by what amuses their minds, so that you may be better able to discover with accuracy the peculiar bend of the genius of each."
>
> – Plato

Section 3: Definition and Identification

Introduction to Gifted Education and Talent Development

Education endeavours to engage students fully in the learning process. While the educational system strives to provide and facilitate a wide-range of experiences and opportunities, there are students who require extended or more complex options for programming. With appropriate program planning the possibility for students who exhibit characteristics of giftedness to be actively engaged and to reach their full potential increases.

Teachers have often recognized the diversity of gifts and talents in their students but have not always known how to differentiate curriculum, instruction, and assessment to best meet these students' unique educational needs. Giftedness is no longer thought of as a static condition identified solely by a high IQ score. Educators' thinking has changed dramatically as a result of research on artistic and creative endeavours, brain functioning, multiple intelligences, and talent development. Based on the research done by Renzulli, Gardner, and Sternberg, it is a foregone conclusion that giftedness is more than high ability.

The emphasis in today's schools is on developing programs and services that meet the individual needs of students. With this in mind, *Gifted Education and Talent Development* has been created to assist school boards and school personnel in the development of appropriate programming options to help students who exhibit gifted and talented behaviours best apply their strengths and interests to meet their learning potential.

Gifted Education and Talent Development focuses on

- defining giftedness
- identification and assessment
- programming options at the school level
- programming options for the classroom
- the program planning process, supporting the gifts and talents of students
- professional development and additional resources

Giftedness Defined

Before school personnel decide to explore options for programming, they must begin with a common understanding of giftedness and talent development. Based on contemporary theories and research, this understanding is the foundation for all subsequent decisions pertaining to enrichment programming and services for all students in Nova Scotian schools.

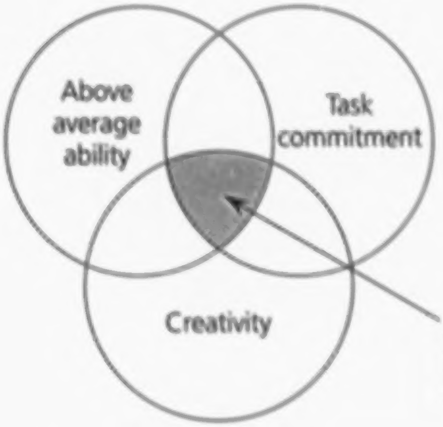
Students with gifts and talents perform at, or show the potential for performing at, high levels of accomplishment in one or more areas when compared to others of the same age, experience, or environment. (Johnsen 2004, Renzulli and Smith 1978) These areas include leadership in specific academic fields as well as intellectual, creative, and/or artistic domains.

> “I am always doing that which I cannot do, in order that I may learn how to do it.”
>
> – Pablo Picasso

Talents develop in stages over time within interest areas if an individual possesses the right combination of ability and aptitudes with opportunity, experience, support, and encouragement. Some talents are easily observable in the classroom because they are already well developed and students have opportunities to express them in the curricular and extracurricular activities commonly offered in schools. Other talents only develop if students are exposed to many and various domains and hands-on experiences that are not provided within the curriculum. Therefore, effective enrichment programming has a dual purpose. One is to offer challenge to support growth in students' observable gifts and talents, and the other is to provide new and varied experiences to all students to reveal their gifts and talents.

Modern conceptions of giftedness recognize diversity, multiple forms of giftedness, and inclusivity. There is no single profile of a gifted learner, and no single criterion can be used to identify giftedness. Gifted and talented students represent the diversity of society: race, gender, sexual orientation, ability/disability, education, geographic origin, age group, social class, family, religion, language, and ethnic group. Students with diverse gifts and talents express, or have the potential to express, their gifts and talents through a wide range of behaviours, abilities, interests, and personal characteristics. Giftedness is socially constructed and is influenced by the interactions between personality and environment.

According to Joseph Renzulli's Three-Ring Conception of Giftedness (1978), gifted behaviours result from the interaction of varying amounts of three clusters of traits: above average ability, task commitment, and creativity, as found within specific fields. (See the figure below.)



Gifted behaviours result from the interaction of the three traits within specific fields.

The three-ring conception of giftedness emphasizes the interaction among the clusters rather than focusing on any single cluster. This interaction is the necessary ingredient for creative/productive accomplishment. It is important to note that gifted behaviours take place in certain people, at certain times, and under certain circumstances.

Above Average Ability

Above average ability should be interpreted to mean the upper range of potential and is representative of the top 15–20 percent of the student population within any given area of human endeavour.

Within this model the term "above average ability" will be used to describe both general and specific abilities.

General abilities may be demonstrated by one or more of the following:

- high levels of abstract thinking, verbal and numerical reasoning, spatial relations, memory, and word fluency
- adaptation to, and the shaping of, novel situations encountered in the external environment
- automatic information processing and the rapid, accurate, and selective retrieval of information

Specific abilities may be demonstrated by one or more of the following:

- the application of various combinations of the above general abilities to one or more specialized areas of knowledge or areas of human performance (e.g., the arts, leadership, administration)
- the capacity for acquiring and making appropriate use of advanced amounts of formal knowledge, tacit knowledge, technique, logistics, and strategy in the pursuit of particular problems or the manifestation of specialized areas of performance
- the capacity to sort out relevant and irrelevant information associated with a particular problem or area of study or performances

Task Commitment

Task commitment represents the energy brought to bear on a particular problem (task) or specific performance area and is demonstrated by one or more of the following:

- the capacity for high levels of interest, enthusiasm, fascination, and involvement in a particular problem, area of study, or form of human expression
- the capacity for perseverance, endurance, determination, hard work, dedicated practice, self-confidence, a strong ego and a belief in one's ability to carry out important work, freedom from inferiority feelings, or the drive to achieve
- the ability to identify significant problems within specialized areas and to tune in to major channels of communication and new developments within given fields
- setting high standards for one's work, maintaining an openness to one's own and external criticism, and developing a sense of quality and excellence about one's own work and the work of others

Creativity

Creativity may be demonstrated by one or more of the following:
fluency, flexibility, originality, and elaboration of thought, including being

- open to experience and receptive to that which is new and different (even irrational) in the thoughts, actions, and products of oneself and others
- curious, speculative, adventurous, and "mentally playful" and willing to take risks in thought and action, even to the point of being uninhibited

- sensitive to detail and the aesthetic characteristics of ideas and things and willing to act on and react to external stimulation and one's own ideas and feelings

(For more information on creativity, see Section 5.)

As is usually the case with lists of traits such as the above, there is an overlap among individual items and an interaction between and among the general categories and the specific traits. It is also important to point out that all of the traits need not be present in any given individual or situation to produce a display of gifted behaviour.

Identification and Assessment

> *Those whose talents are at levels exceptionally higher than their peers should have access to instructional resources and activities that are commensurate with their talents.* (Feldhusen 1998)
>
> *Multiple identification criteria based on multiple sources should be used to include rather than exclude. Identification should focus more on gifted children's needs and less on labelling.* (Robinson, Shore, and Enersen 2007)

The identification and assessment process assists school personnel in determining students' strengths and challenges in order to form the basis for program planning. Its key points include the following:

- Instruments used for student assessment to determine gifted-education services must measure diverse abilities, interests, and talents in order to provide students with an opportunity to demonstrate their strengths. Student assessments should be sensitive to all stages of talent development, including information on potential as well as demonstrated abilities.
- There is no one profile of a gifted learner. A student assessment profile must be developed to plan appropriate intervention.
- All student identification procedures should come from multiple sources and include multiple assessment methods, including classroom assessments for, of, and as learning.

  Possible sources of data include the following:
  - anecdotal observations
  - a developmental history
  - rating scales, checklists, or inventories of observed behaviours and characteristics
  - examples of student work
  - examples of the student's creativity
  - demonstrations of creative and critical thinking
  - achievement tests
  - aptitude tests
  - intelligence or cognitive ability tests including off-level testing

- Written procedures for student identification must include, at the very least, provisions for informed consent, student reassessment, and transitioning.

Identification

Identification is the process of assessing the strengths, challenges, talents, and interests of students in order to determine their need for support and to form the basis for appropriate programming and services. Often, students with gifts and talents are viewed only in terms of academic performance and achievement. A holistic approach, including academic, social, emotional, cultural, and behavioural perspectives, is critical to a comprehensive identification and assessment process. This process should include multiple sources of qualitative and quantitative information to assist school-based teams in identifying students who would benefit from participation in enrichment and/or talent development programming. This is an ongoing process in which parents/guardian, school personnel, and the student recognize, understand, and work together to facilitate the development of the student's unique talents.

Emphasizing talent identification and development rather than giftedness changes the focus of the identification process to one that is highly inclusive (Lohman and Renzulli 2007). Once a student's talent areas and interests have been identified, the program plan should focus on the knowledge, skills, and resources (human and material) needed to develop those talents.

School board policies should ensure that a combination of informal and formal measures is used in identifying students to determine the need for programming.

> “The teacher's use of a broad range of assessment strategies and tasks affords students multiple opportunities and a variety of ways to demonstrate their knowledge, skills, and attitudes.”
>
> – *Public School Programs,* Nova Scotia Department of Education, p. C-5

Assessments should be carried out by a school team, including the student (as appropriate), parent(s)/guardian(s), administrator(s), teacher(s), and core professionals (e.g., psychologists, school counsellors, consultants/supervisors) where it is appropriate. Early and continuous assessments ensure that the program developed meets the student's needs. School boards are responsible for ensuring that this process is developed and implemented.

The following assessment guidelines may assist in developing and implementing the assessment process:

- The identification process must include multiple instruments, multiple contents, and multiple observers.

- The identification process should be available to all students.
- The identification procedures used should measure diverse abilities/intelligences.
- The identification should be sensitive to the needs and experiences of male and female students, students with learning disabilities, and racially visible and ethnically diverse learners (notably African Nova Scotian and Mi'kmaw students).
- Identification should include information on potential as well as demonstrated abilities.
- The identification procedures should correspond to the area(s) of ability being assessed.
- The identification procedures should employ qualitative and quantitative information.

Possible sources of data to assist in the identification process may include the following qualitative and quantitative measures:

- anecdotal observations from parents/guardians, teachers, peers, mentors, and/or the students themselves
- a developmental history (e.g., parents' descriptions of the child's exceptional abilities and interests)
- rating scales, checklists, or inventories of the observed behaviours and characteristics
- samples of student work (e.g., portfolios)
- examples of the student's creativity
- demonstrations of creative and critical thinking (e.g., journals, learning logs)
- achievement tests: measures of specific knowledge and skills in a specific content area (e.g., Canadian Achievement Test-4, report card grades)
- aptitude tests: measures of a student's natural talents or special abilities for doing or learning to do certain kinds of things
- intelligence or cognitive-ability tests: measures of analytic skills not tied to specific content areas that represent a student's ability to reason and think (e.g., psycho-educational tests)
- off-level testing: administering an above-grade-level test to measure a student's performance beyond a particular grade level. Off-level tests are generally used when a student's performance is expected to be two to four grade levels above his or her age mates (e.g., using classroom assessments developed for higher grade levels, using an above-grade-level benchmark to evaluate a performance/product)

Qualitative Assessments

Examining Student Work/Performance

Auditions and performance-based assessments are the preferred modes of evaluating talent in the performing arts; portfolios are preferred modes in the graphic arts. Performance-based assessments are also valuable in other subject areas.

It is beneficial to collect examples of student work over time and across subject areas. Portfolios are useful in the identification of talents in academic areas when they contain the results of a student's projects, problem-solving activities, and creative productions. Portfolio assessments focus on the positive and include samples of best performance and reflections of student work over time. The work that is collected should be both teacher-generated and student-generated, and each item should contain student reflection.

Observations

Rating scales and checklists are useful in identifying talents and strengths, but no one checklist is sufficient. Students should be observed over a period of time and in a variety of settings that provide opportunities for them to perform, as they will be more likely to exhibit gifted characteristics and behaviours in differentiated classrooms. Gifted and talented students will demonstrate many, but not all, of the characteristics/behaviours on any one checklist. Gifted and talented students may show potential or performance in only one area.

Observing student interests, behaviours, and abilities provides indicators of talent and talent potential. There are several commercially produced rating scales that can help teachers focus their observations on specific gifted behaviours (see below). It is important to note that students may demonstrate gifted behaviours in very particular situations, so it is imperative to take a team approach to identification. The responsibility for identification should not rest on one person in the school, nor should identification be comprised solely of academic performance.

Rating Scales

Sample rating scales (see the following appendices in Section 3):

• Sample Parent/Guardian Information Form	Appendix 3-6
• Sample Teacher Information Form	Appendix 3-7
• Student Interest Inventory	Appendix 3-8
• Learning Styles: Teacher Observation Checklist	Appendix 3-13

***Programming For Students With Special Needs: Teaching Students Who Are Gifted and Talented* Sample Rating Scales** (Alberta Learning 2000); available through the Nova Scotia Book Bureau, NSBB# 16625

- Recognizing Giftedness: Identifying Characteristics
- Class Assessment
- Gifted Students—Teacher Recognition Checklist
- Parent/Guardian Identification Form
- Gifted Students—Individual Rating Scale
- Peer Nomination

Commercial Rating Scales (Level A assessments to be completed by classroom teachers, and parents/guardians when applicable)

Scales for Rating Behavioural Characteristics of Superior Students (SRBCSS) (Renzulli et al. 2005)

The *SRBCSS* may be used to identify and assess talent indicators, which closely relate to students' abilities. It asks teachers to rate the frequency of students' observable behaviours. The rating scales are designed to obtain teachers' estimates or judgments of student characteristics in the following areas:

- art
- communication (expressiveness)
- communication (precision)
- creativity
- dramatic aptitude
- leadership
- learning
- mathematics
- motivation
- music
- planning
- reading
- science
- technology

The *SRBCSS* are also to be used in conjunction with other information in order to capitalize on students' strengths. The individual student becomes his or her own norm of reference. (Renzulli et al. 2005)

Sample SRBCSS items include the following:

- learning characteristics: The student demonstrates …
  - insight into cause and effect relationships
  - the ability to deal with abstractions
- creativity characteristics: The student demonstrates …
  - sensitivity to beauty and the aesthetic characteristics of things
  - a non-conforming attitude and does not fear being different
- motivation characteristics: The student demonstrates …
  - behaviour that requires little direction from teachers
  - intense involvement in certain topics or problems
- leadership characteristics: The student demonstrates …
  - the ability to organize and bring structure to things, people, and situations
  - a tendency to be respected by classmates

Once a student's talent areas and interests have been identified, the program plan should focus on the knowledge, skills, and resources (human and material) needed to develop those talents.

Gifted Rating Scales (GRSs) (Pfeiffer and Jarosewich 2003)
Note: The GRS-P is recommended for young children (primary to grade 2) and the GRS for students ages 6 to 13.

The GRSs are completed by classroom teachers who are asked to rate a child in five areas of giftedness (intellectual ability, academic ability, creativity, artistic talent, and leadership) as well as in the area of motivation. Scores are based on how the child compares with other children of the same age in regular educational settings.

- *Scales for Identifying Gifted Students* (SIGS) (Ryser and McConnell 2003)
  Note: The SIGS include forms for teachers and parents/guardians to complete.

An advantage of the SIGS is that parents/guardians are involved in the identification process. Students may not demonstrate gifted behaviours in the school setting for a multitude of reasons but may demonstrate advanced abilities or potential at home in more familiar surroundings. If the student is young and/or new to the school, the parental perspective is an even more crucial piece of information.

The SIGS assess student characteristics in seven areas: general intellectual ability, language arts, mathematics, science, social studies, creativity, and leadership. Each area is assessed at home and at school. Because each of the seven scales provides a separate score, all scales do not need to be rated. A teacher or school team can decide on which and how many of the scales to use.

Student Interests

One of the key principles of enrichment teaching and learning is that students' intrinsic motivation, skill development, and performance are enhanced when they are involved in areas of personal interest. Therefore, to develop enrichment programming for gifted and talented students, it is essential to explore their personal interests. There are many ways to investigate student interests, including informal conversations, formal interviews, and the use of checklists and interest inventories. One example is the Student Interest Inventory found in Appendix 3-8.

Student Interviews

The purpose of an interview is to more completely identify characteristics and interests that are reflective of the student and not easily measured or observed by the student's teachers. The objective is to explore student responses to questions about motivation, learning style, creativity, and problem solving. (Johnsen 2004)

Interviews with the student should be a combination of structured and unstructured questions. Structured questions are established in advance, and the student selects a response from the multiple choices offered. Unstructured questions are open-ended, allowing the student to express himself or herself. The interviewer does not have to transcribe the conversation verbatim but should record notes and observations to be included in the student's overall assessment.

Quantitative Assessments

Quantitative measures for the identification of gifted behaviours and talent potential may supplement the information provided through qualitative assessments. Aptitude, achievement, and individual cognitive-ability assessments are examples of quantitative measures.

Cognitive assessments conducted by professional psychologists should not be required for students to receive gifted services, programming, or support. Such an assessment by itself will not determine the educational placement or programming for a student. It is recommended that schools use local norms whenever possible because "the need for special services depends primarily on the disparity between children's cognitive and academic development and that of the other children in the classes they attend, not all other children in the nation at the time that the test was 'normed.'" (Lohman and Renzulli 2007). Examples of this kind of test are the Woodcock-Johnson 3 (WJ–3) and the Wechsler Intelligence Scale for Children (WISC–IV).

> "So precious a talent as intellect never was given to be wrapt and buried in the earth."
>
> – Angela Brimke

Characteristics of Giftedness

There is no one profile of a gifted learner. The characteristics are not all inclusive, and students with gifts and talents may not exhibit all of these characteristics at any given time. Educators should keep in mind that gifted learners often

- ask the questions and/or question the answers
- are mentally involved
- have creative ideas
- discuss in detail
- are beyond the group
- show strong opinions
- construct abstractions
- relate well to adults
- manipulate information
- initiate projects
- are critical of own work
- enjoy learning

Based on the definition of giftedness referred to earlier in this section, the following are characteristics and examples of gifted students:

Intellectual/cognitive aptitude: has superior reasoning ability

Characteristics	Does the student ...
• questions critically • constructs abstractions • learns rapidly and easily • thrives on complexity • analyzes, evaluates, and synthesizes information • thinks analogically • demonstrates precocious language and thought	• ask many questions? • have a wide general knowledge? • become unusually upset at injustices? • seem interested in and concerned about social or political problems? • often have a better reason than you do for not doing what you want done? • show disinterest in repetitive tasks? • engage in multiple tasks simultaneously? • become impatient if his or her work is not "perfect"? • seem to be a loner? • complete only part of an assignment or project and then take off in a new direction? • appear restless or daydream? • like solving puzzles and problems? • have his or her own idea about how something should be done and stay with it? • use metaphors and abstract thinking? • enjoy debating issues?

Example

The following example illustrates a student displaying some of the above characteristics:

One night a mother was reading some poems by Shel Silverstein to her five-year-old son. She read the following poem and stopped after the fourth line:

Who wants a pancake, sweet and piping hot?
Good little Gracie looks up and says, "I'll take the one on top."
Who else wants a pancake, fresh off the griddle?
Terrible Theresa smiles and says, "I'll take one in the middle."
(Shel Silverstein 1974)

The following conversation then took place:

Mother:	*"Now where would someone named Terrible Theresa take the pancake from?"*
Son:	*"Oh, from the middle, of course."*
Mother:	*"Why would you say that?"*
Son:	*"Because the middle is the hottest."*
Mother:	*"How do you know that?"*
Son:	*"It's the same as the Earth. At the core it's the hottest, just like the stack of pancakes."*

He quickly made an abstraction from a seemingly unrelated topic to problem solve on an independent basis. The reply is indicative of his ability to analyze and evaluate information and to think analogically, which is a characteristic of many students with gifts and talents.

Specific academic aptitude: demonstrates the characteristics of advanced intellectual/cognitive ability in one or more subject areas

Characteristics	Does the student ...
• produces qualitatively superior outcomes • shows intense interest and/or commitment to a topic focus • demonstrates advanced/sophisticated knowledge and understanding • learns easily in particular subject area(s) • obtains high success in subjects of interest • connects idea(s)	• show unusual ability in a particular area? • show fascination with one field of interest and manage to include this interest in all discussion topics? • enjoy meeting or talking with experts in this field? • solve problems with ease but may find it difficult to explain his or her thinking process? • analyze and evaluate information? • invent obscure systems and codes?

Example

Matthew's grade 4 class was about to begin a mathematics unit on data management. Student conferences were a regular part of teaching and learning in his classroom, and during a conversation with Matthew, his teacher discovered that he had been engaged in lively, detailed conversations at home concerning the building of a local sewage treatment plant. Matthew's teacher asked him what his thoughts were on the subject, and his reply was that although he was very familiar with his family's point of view, he was not ready to commit to a viewpoint himself and was curious to find out what his community's take was on this topic.

Matthew had been exhibiting gifted behaviours since he first began school. He was particularly adept at mathematics and was working at a high school level. He also showed advanced observational skills, a quest for answers and well-developed thinking skills.

Matthew's teacher asked him how he might find out the answer to his questions about the sewage treatment plant, and through their conversation, it was decided that he would create a survey to send out to the community. He would gather the surveys, analyze the data, and present his findings in the school's newsletter. Matthew's teacher also linked him with a volunteer who assisted him in developing an understanding of water treatment, including hands-on experience where Matthew learned how to test the local water supply. The teacher located the volunteer from a database of community volunteers the school had created earlier in the year by using the survey found in this document.

Creativity: consistently engages in divergent, original thinking that results in unconventional responses to conventional tasks (Johnson 1992)

Characteristics	Does the student ...
• creates, designs, and invents • thinks independently • makes jokes and puns at unexpected times • takes risks and speculates • demonstrates a certain intellectual playfulness and gives free rein to his or her imagination	• try to do things in different, unusual, and/or imaginative ways? • have a bizarre sense of humour? • enjoy new routines or spontaneous activities? • thrive on variety and novelty? • create problems with no apparent solutions and enjoy asking you to solve them? • pose controversial and unusual questions? • have a vivid imagination? • never seem to proceed sequentially?

Examples

It was the second day of school, and the grade 2 children stared openly at a newcomer: six-year-old Charlie, who had been moved abruptly into their room after one day in grade 1. Charlie tried to relax by concentrating on his stamp collection at home, remembering his lengthy correspondence battle the previous year with one company. (Dear Sir: I plan to take you to court unless your nuisance bills stop immediately for stamps that I have not ordered. I am five years old.) Just then the teacher picked up something from the floor. "Who dropped an eraser?" Charlie tried *to stifle a giggle. The teacher, reddening, demanded to know the joke. The new boy looked around the class, giggled again, and said, "Who shaves around here?" He found humour in puns that went over the heads of all of his classmates and sometimes the teachers too.*

(Canadian Education Association 1980)

"Do dinosaurs have hair in their nostrils?" (Grade 4 student)

Artistic ability: demonstrates outstanding ability in the visual and performing arts

Characteristics	Does the student …
• expresses intense feelings, thoughts, and moods through art, drama, music, and/or dance • produces original products • makes sophisticated use of techniques and media • critiques work for self and others • takes advantage of open-ended assignments as a means of producing artistic interpretations	• display abilities in the arts (e.g., music, dance, drama, painting) without formal instruction? • experiment with new materials and/or use unique combinations? • compose and create original music, dance, drama, and/or art? • observe minute details in products or performances? • assume quickly the role of a character and imitate or mime people or animals? • have high sensory sensitivity? • draw or sculpt objects in a different way from other students? • build depth into drawings, plan the layout of pictorial elements, and use correct proportions?

Examples

When he was three years old, Yehudi Menuhin was smuggled into the San Francisco orchestra concerts by his parents. The sound of Louis Persinger's violin so entranced the youngster that he insisted on a violin for his birthday and Louis Persinger as his teacher. He got both. By the age of 10, Yehudi was an international performer.

Violinist Yehudi Menuhin's musical intelligence manifested itself even before he had touched a violin or received any musical training. His powerful reaction to that particular sound and his rapid progress on the instrument suggest that he was biologically prepared in some way for that endeavour. (Gardner 1993)

In music class the child's voice rises over the others; in art the child's hand reaches for the colours that link the picture to the child's imaginings; in drama the simple response asked for by the teacher is turned by the child into a dramatic presentation. (Gardner 1993)

Leadership: demonstrates an outstanding ability to lead

Characteristics	Does the student ...
• is assertive • demonstrates self-confidence • organizes people and events with ease • motivates others • interprets political/social contexts • facilitates teamwork • directs and may tend to dominate • adapts to new situations readily • is accepted by his or her peers as a leader • uses synergy • sees the "big picture" • communicates effectively • facilitates action • is resourceful • perseveres	• organize and lead group activities? • sometimes take over? • demonstrate a confident, self-assured attitude? • take risks? • actively seek a decision-making role? • synthesize ideas and information from many different sources?

Example

Two grade 12 students, David Shepherd and Travis Price, from Central Kings Rural High School in Cambridge, Nova Scotia, took positive action when they heard that a student in their school had been harassed, called a homosexual, and threatened to be beaten up because he wore a pink shirt to school.

They purchased 50 pink shirts and tank tops and went online to get classmates to work with them on an anti-bullying campaign. The support they received was overwhelming as dozens of fellow students wore the pink T-shirts and hundreds of others showed up wearing their own pink clothes.

The bullied student was immediately relieved both because of the support and because the bullying stopped. The students worked with David and Travis to show that they were not going to put up with bullying. Together they were able to remove the bullies' power.

As a result of the leadership shown by these two boys, the Premier's Power of Positive Change Award program has been established. Ten awards will be presented to Nova Scotian students from grades primary to 12 annually. The recipients must have demonstrated leadership in organizing a school or community activity/activities or shown exemplary behaviour that promotes positive attitudes and behaviours, based on the positive effective behaviour supports (PEBS) approach.

Multiple Intelligences

Students demonstrate giftedness in many areas and in many ways. "It is of the utmost importance that we recognize and nurture all of the varied human intelligences and all of the combinations of intelligences." (Gardner 1987) Work on multiple intelligences by Howard Gardner, of the Harvard Graduate School of Education, has revolutionized the concept of intelligence. He presents a view of intelligence as multi-faceted and focuses on "the capacity for (1) solving problems and (2) fashioning products in a context-rich and naturalistic setting." (Armstrong 1994)

Gardner's theory of multiple intelligences identifies eight categories of "intelligences." However, it should be emphasized that these intelligences rarely exist in isolation; there is constant interaction among them. Armstrong (1994) gives an example of this interaction when describing the intelligences used to play the game of soccer: bodily-kinesthetic (to run, kick, and catch), spatial (to orient to the playing field and the ball in space), and linguistic and interpersonal (to discuss rules and strategies and to play co-operatively). Gardner's eight intelligences are briefly described in the following chart.

Intelligence	Description
Linguistic	• ability to use words effectively, orally, and in writing • ability to manipulate the structure, sounds, and meanings of language as well as the practical uses of language
Logical-mathematical	• ability to use numbers effectively and to reason well • ability to recognize patterns, discern relationships, and make if-then/cause-effect connections and other abstractions
Spatial	• ability to perceive the visual-spatial world accurately and to see line, shape, colour, form, and space and the relationships among them • ability to form mental images
Bodily-kinesthetic	• ability to use the body to express emotion and to produce or transform things and play a game (as in a sport)
Musical	• ability to perceive, discriminate, transform, and express musical forms. (This can be both intuitive and analytic.)
Interpersonal	• ability to perceive and make distinctions in the moods, intentions, motivations, and feelings of other people • ability to communicate and co-operate
Intrapersonal	• ability to know and understand himself or herself and to act on the basis of that knowledge • ability to discern connections with the larger order of things
Naturalist	• ability to recognize and classify the various elements of nature • ability to create something that is valued in one or more cultures

Exploration of these intelligences and their implications for teaching and learning can lead teachers and administrators to develop a more in-depth understanding of human potential. This, in turn, provides educators with a more holistic perspective in the identification of students with exceptional abilities.

> “It's not how smart you are, it's how you are smart!”
>
> – Howard Gardner interview, "Common Miracles: The New Revolution in Learning" (Jennings and Blackmore 1993)

> All human beings possess these intelligences; therefore, these intelligences must be seen as potential ways to create meaning. While people have the potential to develop each of these intelligences, it is possible to have strengths or aptitudes in different areas. Thus, if education is viewed in terms of multiple ways of knowing, education must provide diverse opportunities for all students to develop these aptitudes and intelligences.
>
> (*Programming Handbook: Gifted Education,* Nova Scotia Education and Culture, 1995)

(For more information on multiple intelligences and using them in the classroom, see Appendix 3-15.)

Obstacles in the Identification of Giftedness

There are a variety of issues and perspectives to consider in the identification of students with gifts and talents. A holistic approach including academic, social, emotional, cultural, and behavioural perspectives is critical to a comprehensive identification and assessment process. Gifted and talented students represent the diversity of society: race, gender, sexual orientation, ability/disability, education, geographic origin, age group, social class, family, religion, language, and ethnic group.

Stereotyping is the result of attributing the characteristics of a whole group of people to all of its members. Stereotyping exaggerates the uniformity within a group and the differences among groups. (*Racial Equity Policy,* Nova Scotia Department of Education, 2002) Therefore, teachers may need to broaden their perspectives to be more aware of how their own personal values can affect their evaluation of students.

The following is a discussion of the diverse issues and perspectives to consider in the identification of giftedness.

Race/Culture/Ethnicity

Students with gifts and talents are found within all socio-economic strata and all racial and ethnic groups. Students outside the dominant culture may exhibit characteristics of giftedness that may not be recognized in the school system. Historically, African Canadian and Mi'kmaw students have rarely been identified as being gifted or talented.

> “The worst form of inequality is to try to make unequal things equal.”
>
> – Aristotle

Recent studies show that racially visible and ethnically diverse students continue to be under-represented in gifted education. Peterson and Margolin (1997) state, “We can see the consequences in the continued under-representation of minority children in gifted programs; despite inclusive philosophies, attempts to create more culture-fair assessment instruments ... and admonitions about using multiple criteria for selection ... the selective distribution of positive labels in our schools parallels and supports the class differences and racial discrimination found in society as a whole ...” The Nova Scotia Department of Education is committed to equality and diversity and to maximizing the potential of all students attending schools in Nova Scotia.

Socio-economics

All schools must ensure that enrichment activities and programming involve students reflective of the school population and of Nova Scotia. Teachers, guidance counsellors, and principals must seek out and motivate gifted racial-minority students as well as students from all socio-economic backgrounds. Educators in every school are responsible for providing challenges for all students but most especially for those students who achieve in the top 15–20 percent of each school population.

Instructional Practices

When classroom instructional practices rely solely on traditional textbook, workbook, or lecture modes of instruction, gifted/talented students may exhibit characteristics that are indicative of boredom due to a lack of stimulation and/or challenge (e.g., refusing to do rote tasks, not interested in detail, daydreaming, appearing disorganized). Many gifted students are highly creative, and their talents may not be evident in formal educational settings. Furthermore, gifted behaviours may only be evident outside traditional school subjects or school/classroom settings. For example, creative students may or may not be students who score in the top five percentile points on standardized measures of ability and achievement, and they may or may not be straight-A students. Report card grades and provincial assessment scores are not the only or the most effective indicators of student talent potential or ability in many domains. Gifted and talented students need opportunities to explore their individual talents, demonstrate their creativity, and engage in challenging and meaningful learning experiences.

Gender Equity

Gender equity is concerned with the promotion of personal, social, cultural, and economic fairness for all. The term "gender equity" emerges out of a growing recognition of the pervasive gender inequities in society. Continuing traditions of stereotypical and discriminatory practices have resulted in the systemic devaluation of females of all ages. The negative consequences also adversely affect males.

It is important to note that some females may be subject to a kind of double discrimination with respect to gender issues. This double discrimination exists for females who are also aboriginal people, people with disabilities, and racially visible people.

School personnel can assist in promoting gender equity in the following ways:

- Assure that both females and males have an equal share of the teacher's attention.
- Include questions that ask both females and males to use analytical and higher-order thinking.
- Praise or criticize both females and males and accept female and male staff/student contributions as equally valid.
- Stop disparaging comments based on gender or sexuality.
- Use gender-neutral language (e.g., chair or chairperson instead of chairman; humankind, people, human beings, humanity instead of mankind; employees instead of manpower).
- Recognize and address bias in programs/courses, course content, and learning resources that aid inequities.

Gender equity encourages greater participation of all students in school/classroom interaction. It increases the self-worth and potential of all students. It helps to remove stereotypical views, sexism, and sexual discrimination in society. Gender equity provides society with the benefit of the full participation and contribution of all of its members.

It is important to be aware that being gifted and female can create its own set of challenges. Research has shown that female students are often concerned about the perceptions of their peers and may struggle with self-esteem issues and self-confidence, especially during the adolescent years. (Kline and Short 1991)

Therefore, they may hide their talents and abilities in order to remain unnoticed or prevent being viewed as different from others. Belonging overshadows achievement.

(For more information on gender equity, see Appendix 3-15.)

Sexual Orientation

Sexuality is another obstacle in identifying gifted students. Gay, lesbian, bisexual, transgendered, or two-spirited students may recognize or view their own gifts and their sexuality as different and therefore may isolate or withdraw themselves from others. This may result in eliminating the opportunity to display their gifts and talents, resulting in students going unnoticed or being under-challenged.

Asynchrony

Students with gifts and talents may be the object of misunderstanding because they may think and act in ways that are not always understood. Gifted students often have asynchronous (out of sync) intellectual, emotional, and physical development. They appear to be different ages in different situations. In addition to having asynchrony between intellectual and physical abilities, they can have an extreme gap between intellectual development and the ability to express and use that intellect. These students need a safe environment that allows them to be different.

Student Behaviour

Students with gifts and talents may exhibit behaviours such as

- boredom with routine tasks and refusing to do rote homework
- focusing on an area of study to such an intense degree that they refuse to move to other areas of study
- being self-critical and impatient with failures
- being critical of others and of the teachers
- making jokes or puns at inappropriate times
- being emotionally sensitive—may overreact, get angry, or cry if things go wrong
- not being interested in details and producing messy, careless work

- refusing to accept authority and being non-conforming or stubborn
- trying to dominate others
- daydreaming
- appearing to be disorganized and easily distracted

Caution should be taken to ensure that these characteristics do not exclude consideration of the need for enhanced or extended programming.

Gifted students do not always perform at high levels of achievement in every subject. Students with gifts and talents cannot always be measured by academic achievement. For example, these students may

- pass in assignments late
- not make the highest grades
- not test well
- not express themselves well

> “Being a ‘gifted student’ and being a ‘school dropout’ appear as contradictory terms. Yet gifted students do form a significant segment of the school-dropout population.”
>
> – Delisle 1992

Twice Exceptional: Exceptionalities Masking Gifted Behaviour

Learning and/or physically challenged students are often overlooked for enrichment or gifted programming because the symptoms of either giftedness or the disability may overlap, making identification difficult.

Sometimes referred to as “twice exceptional,” these gifted students may

- have a learning disability
- be diagnosed as ADHD
- have a communication/social-interaction disorder
- be coping with mental-health issues
- have a physical challenge

These same students can also exhibit gifted behaviours. The frustration of dealing with these discrepancies can lead a student to have social, emotional, and behavioural problems. Difficulties in conceptualization of the defining characteristics and inappropriate assessments often block the potential for exceptional performance. The emphasis of programming should capitalize on student strengths rather than focussing on student difficulties.

Consider the story of Jane:

By the time Jane reached high school, she found it increasingly difficult to attend and participate in all of her classes. She was unable to cope with rule-oriented classroom environments. She tried to talk her way out of most expectations placed on her.

During her first year of high school, she did extremely well in sections of some courses and very poorly in others. She did not often complete assignments, and she dropped out of school before the year was over. In her second year, one of her science teachers brought her name to the program planning team because of the advanced skills she showed in some areas of study.

A close look by the program planning team resulted in Jane being identified as twice exceptional. She had recently been diagnosed with Asperger syndrome. Through the program planning process, the necessary supports and programming adaptations were provided for the remainder of Jane's high school career. She was able to complete her coursework with support from student services personnel, understanding teachers, and family.

When Jane became overwhelmed or agitated, she knew she was welcome to see a guidance counsellor. The support personnel would assist her in completing assignments and other work that had previously blocked her from success. In those areas where Jane had exceptional abilities, she was challenged to expand her talents and share her knowledge and skills. Her family was firm but fair in their expectations of Jane and worked closely with the school personnel. Jane was able to complete high school and attend community college in order to pursue her interest in computer studies.

Some characteristics of the twice-exceptional student may include

- an uneven intellectual pattern as demonstrated on formal and informal assessments
- an irregular academic pattern with strengths most likely in mathematics or content areas and weaknesses in the language areas—typically in written language
- written-language difficulties including poor handwriting, poor mechanics, and difficulty organizing content
- skill deficits (responds better to teaching in context than to isolated skill building)
- difficulty organizing time and materials

- a need for more time to process language
- visual or auditory perceptual deficits or an unusual visual sensitivity to light
- difficulty with tasks that require the integration of multiple skills

Gifted Behaviours May Not Be Immediately Evident

Gifted and talented students may not choose to demonstrate, or be able to demonstrate, their potential and abilities for a number of reasons that may include

- the interest area not being taught in the school
- timetabling issues and credit requirements
- the student choosing to hide giftedness by underachieving
- external pressures and/or circumstances

Identification is a continuous assessment process that should provide a way to address academic needs as well as social, emotional, and psychological needs. Every exceptionality brings with it a myriad of complex issues that must be recognized and addressed.

Affective Characteristics

The importance of the emotional aspect of giftedness has long been recognized. Individuals who are gifted, because of their greater facility with abstract reasoning, have complex inner lives, early ethical concerns, and a heightened awareness of the world. Intellectual complexity gives rise to emotional depth and complexity. In adolescence, emotional growth in students who are gifted may result in a greater awareness of one's real self; a focus on inner growth through searching, questioning, and carrying on an inner dialogue; an understanding of feelings and emotions; and an empathetic approach to others. In recognizing specific characteristics of students who are gifted, it is important to understand that these students not only think differently from their peers, they also feel differently.

The following chart lists the affective characteristics or emotional traits of many but not all students who are gifted and talented.

Affective Characteristics of Students Who Are Gifted

Characteristic	General Description
Heightened sensitivity and empathy	Compassionate, considerate, and understanding of others; protective, nurturing, and easily moved to tears; feels others' feelings; sensitive to injustice, criticism, and pain; has a strong need for consistency between values and actions with self and others; caring and understanding; forms strong attachments; empowers others; has an aesthetic sensitivity (an appreciation for complexity in works of art and an ability to interpret works of art); able to read non-verbal cues; extremely observant
Heightened intensity of experience	Energetic and enthusiastic; intensely absorbed in various pursuits; has a vivid imagination; emotionally vulnerable; emotionally intense (experiences emotions strongly and may be emotionally reactive); forms strong attachments and commitments; has high expectations of self and others
Perfectionism	High achiever; exhibits high personal standards; sets unrealistic expectations; demonstrates persistence, perseverance, and an enthusiastic devotion to work; gives up if own standards are not met or if a mistake is made; self-evaluative and self-judging; has feelings of inadequacy and inferiority and desires praise and reassurance; becomes extremely defensive if given criticism; is less tolerant of imperfection in others; procrastinates
Introversion	Has deep feelings; is reflective and introspective; focuses on inner growth through searching, questioning, and exercising self-corrective judgment; has knowledge about emotions; may withdraw into self rather than acting out aggressively toward others
Superior humour	Conveys and picks up on humour quickly and well; able to synthesize key ideas or problems in complex situations in a humorous way; has an exceptional sense of timing in words and gestures; has a keen sense of humour that may be gentle or hostile; has a large accumulation of information about emotions; has a capacity for seeing the unusual; has an uncommon emotional depth; open to experiences; has a heightened sensory awareness
Moral sensitivity and integrity	Emotionally sensitive; has an innate sense of right and wrong; has a complex inner life; has early ethical concerns; has a heightened awareness of the world; has advanced moral reasoning and judgment; has high moral values; is empathetic toward others; tolerant (not aggressive); takes responsibility for others and self; has a just attitude (treats everybody by the same standards); truthful; authentic; courageous in the face of adversity; shows altruism and idealism (a desire to enhance caring and civility in the community and in society at large)

Source: Adapted by permission from Alberta Education (Alberta Learning 2000).

Gifted students differ greatly from other children in relation to their social, emotional, or affective characteristics. Consequently, appropriate educational and counselling services are needed to respond to individual differences and to assist students in developing an understanding of themselves, their potential for growth, and their role in society.

One theory by Dabrowski (1964) identifies the emotional development and extreme sensitivity of the gifted as over-excitabilities (OEs). In Dabrowski's Theory of Positive Disintegration he identifies five levels of personality development (psychomotor, sensual, imaginational, intellectual, emotional). He believes that a person's potential is based on one's level of intellect, talents, desire to develop, and the level of OEs.

The five levels of personality development are defined as follows:

- psychomotor: exhibited by a surplus of physical energy through extreme enthusiasm and lots of gestures and impulsive actions
- sensual: shown by a love of sensual things—textures, smells, tastes, and a powerful reaction to negative sensory input
- imaginational: characterized by daydreaming, dramatization, and the use of imagery and metaphors and may lead to the creation of an imaginary world
- intellectual: associated with an intense interest in the meta-cognitive, complex reasoning, new information, and brain teasers/puzzles
- emotional: characterized by an intensity of emotions, a broad range of emotions, strong interpersonal relationships, and compassion and empathy for others

Emotional over-excitability is the most prominent among school-age gifted students. Sensitivity, intensity, perfectionism, and introversion are all aspects of emotional over-excitability. Self-concept is directly affected by one's OEs because the students see themselves as different from others and they believe that there is something wrong with them. Their intense concern for moral issues or search for answers to existential questions causes them to stand out from their peers.

> "The secret of education is respecting the pupil."
>
> – Ralph Waldo Emerson

It is important that educators are aware of the potential relationship between OEs and self-concept. OEs can be very developmentally positive, and school personnel are in a position to provide appropriate affective services including focused gifted counselling interventions and career-development programs to assist students in developing their potential. Counselling that addresses unrealistic goals, emotional intensity, moral concerns, intense stress, and increased incidents of perfectionism could be very beneficial. It is very important that school personnel have an understanding of the impact of giftedness on the development of the child.

Section 3 Appendices

3-1: Differences Between a High Achiever, a Gifted Learner, and a Creative Thinker 61
3-2: Sample Characteristics of Giftedness in Language Arts 63
3-3: Sample Characteristics of Giftedness in Science 64
3-4: Sample Characteristics of Giftedness in Mathematics 65
3-5: Sample Checklist of the Identification of Gifted Behaviours 66
3-6: Sample Parent/Guardian Information Form 67
3-7: Sample Teacher Information Form 70
3-8: Student Interest Inventory 72
3-9: Reflections on Learning Styles 73
3-10: Modality Strength Checklist 74
3-11: Learning Preferences 76
3-12: Learning Channels Inventory 77
3-13: Learning Styles: Teacher Observation Checklist 78
3-14: Multiple Intelligences 79
3-15: Issues on Gender Equity 81

Appendix 3-1

Differences Between a High Achiever, a Gifted Learner, and a Creative Thinker

A High Achiever ...	A Gifted Learner ...	A Creative Thinker ...
Remembers the answers	Poses unforeseen questions	Sees exceptions
Is interested	Is curious	Wonders
Generates advanced ideas	Is selectively mentally engaged	Daydreams or may seem off task
Works hard to achieve	Generates complex, abstract ideas	Overflows with ideas, many of which will never be developed
Works hard to achieve	Knows without working hard	Plays with ideas and concepts
Answers questions in detail	Ponders with depth and multiple perspectives	Injects new possibilities
Performs at the top of the group	Is beyond the group	Is in his or her own group
Responds with interest and opinions	Exhibits feelings and opinions from multiple perspectives	Shares bizarre, sometimes conflicting, opinions.
Learns with ease.	Already knows	Questions: What if ...
Needs six to eight repetitions to master	Needs one to three repetitions to master	Questions the need for mastery
Comprehends at a high level	Comprehends in-depth, complex ideas	Overflows with ideas—many of which will never be developed
Enjoys the company of age peers	Prefers the company of intellectual peers	Prefers the company of creative peers but often works alone
Understands complex, abstract humour	Creates complex, abstract humour	Relishes wild, off-the-wall humour
Grasps the meaning	Infers and connects concepts	Makes mental leaps: Aha!
Completes assignments on time	Initiates projects and extensions of assignments	Initiates more projects than will ever be completed
Is receptive	Is intense	Is independent and unconventional
Is accurate and complete	Is original and continually developing	Is original and continually developing

APPENDIX 3-1

DIFFERENCES BETWEEN A HIGH ACHIEVER, A GIFTED LEARNER, AND A CREATIVE THINKER

Enjoys school often	Enjoys self-directed learning	Enjoys creating
Absorbs information	Manipulates information	Improvises
Is a technician with expertise in a field	Is an expert who abstracts beyond the field	Is an inventor and idea generator
Memorizes well	Guesses and infers well	Creates and brainstorms well
Is highly alert and observant	Anticipates and relates observations	Is intuitive
Is pleased with his or her own learning	Is self-critical	Is never finished with possibilities
Gets "A"s	May not be motivated by grades	May not be motivated by grades
Is able	Is intellectual	Is idiosyncratic

Source: Used by permission from Kingore 2004.

Appendix 3-2

Sample Characteristics of Giftedness in Language Arts

A student may

- learn to read early
- enjoy reading for pleasure
- read for longer periods of time
- enjoy a variety of types of literature
- possess a large vocabulary
- be a good storyteller
- be interested in words and have a large vocabulary
- write with purpose
- be critical of his or her own writing and style
- understand different levels of meaning
- have a breadth of information in advanced areas
- see relationships and make connections
- use metaphorical language with skill
- be more open in expressing opinions and ideas
- demonstrate originality of ideas
- develop his or her own system for solving problems
- dramatize feelings and experiences
- often show humour, satire, and irony
- be flexible and spontaneous
- produce the unexpected
- be intuitive and perceptive
- be passive and unmotivated

Appendix 3-3

Sample Characteristics of Giftedness in Science

A student may

- show a high level of curiosity in science and participate in discussions
- use science kits at home and/or be a member of a science club
- reason effectively and efficiently and make intuitive leaps in solving science problems
- possess a good memory and show persistence in problem solving
- organize data and experiments and use scientific concepts to discover patterns or relationships
- enjoy looking for patterns and relationships and disregard irrelevant data
- understand and employ advanced scientific terms
- improvise with science equipment and develop scientific inquiries to answer his or her own questions
- have the capacity to use higher-order thinking to perform all aspects of science investigations
- show an understanding of connections between science and other disciplines
- possess extensive knowledge of science and be able to apply that knowledge to societal problems
- exhibit unusually high levels of motivation and/or concentration

Appendix 3-4

Sample Characteristics of Giftedness in Mathematics

A student may

- choose to do mathematics when presented with a choice of activities
- master content more quickly and at an earlier age than his or her peers
- reason effectively and efficiently and solve problems intuitively, using insight
- be capable of working independently on self-directed activities
- be capable of doing problems abstractly
- take risks with mathematical concepts and strategies and be able to relate mathematical concepts within and across content areas and real-life situations
- think logically and symbolically about quantitative, spatial, and abstract relationships
- enjoy the challenge of mathematical puzzles and games and solve problems with multiple and/or alternative solutions
- persist in the search for solutions to complex tasks
- formulate probing mathematical questions that extend or apply concepts
- concentrate for long periods of time on a problem that he or she finds interesting
- have exceptional mathematical reasoning ability and memory and be able to reverse steps in the mental process
- be more likely to see relationships between a new problem and problems previously solved and enjoy posing original problems

Appendix 3-5

Sample Checklist for the Identification of Gifted Behaviours

Student's name: ______________________________ Date: ______________

Strength: ____

True?	Behaviour
☐	**Humour:** exceptionally keen sense of the comical, the bizarre, and the absurd
☐	**Motivation:** intense desire to know, do, feel, create, or understand
☐	**Interests:** ardent, sometimes unusual, passionate, sometimes fleeting
☐	**Communication/expressiveness:** extraordinary ability to convey meaning or emotion through words, actions, symbols, sounds, or media
☐	**Inquiry:** probing exploration, observation, or experimentation with events, objects, ideas, feelings, sounds, symbols, or media
☐	**Problem solving:** outstanding ability to bring order to chaos through the invention and monitoring or paths to a goal; enjoys a challenge
☐	**Sensitivity:** unusually open, perceptive, or responsive to experiences, feelings, and others
☐	**Intuition:** sudden recognition of connections or deeper meanings without conscious awareness of reasoning or thought
☐	**Reasoning:** outstanding ability to think things through and consider implications or alternatives; rich, highly conscious, and goal-oriented thought
☐	**Imagination/creativity:** extraordinary capacity for the ingenious, flexible use of ideas, processes, or materials
☐	**Memory/knowledge/understanding:** unusual capacity to acquire, integrate, retain, and retrieve information or skills
☐	**Learning:** ability to acquire sophisticated understanding with amazing speed and apparent ease

Source: *Gifted Education: A Resource Guide for Teachers* (British Columbia Ministry of Education 1995)

Appendix 3-6

Sample Parent/Guardian Information Form

Student's name: ______________________________ Grade: ____________

School: ____

Language(s) spoken by student: ________________________ Date: ____________

Parent's/guardian's signature: ________________________________

The information you are providing is to assist in enriching your child's program in the classroom. These items include a wide range of possible characteristics. An indicator in the high category is not necessary for all items. Some items may not have been observable.

Section A	Low	2	3	High	Not Observable
Asks many questions as to what, where, when, how, and why					
Solves problems in an organized manner					
Is able to work on his or her own					
Enjoys imaginative roles/games					
Sees humour in certain situations					
Is sensitive to the feelings of others					
Pursues his or her own interests in seeking new information					
Is able to analyze and offer positive, constructive suggestions					
Likes to express and defend his or her point of view					

Section B	Low	2	3	High	Not Observable
Is determined or persistent in completing tasks					
Always performs to the best of his or her ability					
Likes to organize activities and assume leadership roles					
Is able to work independently and/or requires little direction					
Is persistent in his or her opinions and often self-assertive					
Pursues questions of right and wrong and/or is concerned with fairness					

Section C	Low	2	3	High	Not Observable
Is able to express himself/herself clearly					
Is well aware of his or her environment					
Has a good memory					
Is able to discuss and analyze storylines					
Reads many books on various topics					
Uses media effectively as a source of information					
Is able to deal with a difficult situation through reasoning and planning					
Has interests similar to those of older children and adults					
Is interested in issues such as race, religion, and the environment					

1. Indicate any special interests or skills your child has. Give examples of the degree of involvement.

____

____

____

2. Reading interests (favourite type of books and/or titles of favourite books):

____

____

____

3. Favourite subjects:

____

____

____

4. General attitude toward school:

5. Contributions and responsibilities to family and community:

6. Favourite leisure activity:

7. Special lessons, training, or learning opportunities outside of school:

8. Other information that you would like us to know that would assist us:

Appendix 3-7

Sample Teacher Information Form

Student's name: ______________________ Grade: ____________

School: ______________________ Teacher: ____________

Signature of teacher: ______________________ Date: ____________

Signature of principal: ______________________

Check the column that best describes the student's functioning within the regular school program. These items include a wide range of characteristics. An indicator in the high category is not necessary for all items. Some items may not have been observable.

Section A	Low	2	3	High	Not Observable
Asks many questions, especially what, where, when, how, and why					
Solves problems on a superior level, divergently and innovatively					
Is responsible and independent					
Is creative and imaginative					
Has a keen sense of humour and a sharp wit					
Is sensitive to the feelings of others					
Applies learning from one situation to another					
Is able to analyze and offer positive, constructive suggestions					
Recognizes and accepts the validity of different points of view					
Produces work that is original, vital, clever, and unique					
Can express and defend his or her point of view					
Sees relationships and is able to draw sound generalizations					
Has a talent or talents in art, music, writing, drama, and/or dance					

Comments: ______________________

____

Section B	Low	2	3	High	Not Observable
Is determined or persistent in completing tasks					
Sets realistically high standards, high goals, and high ideals for himself or herself					
Likes to organize activities and people					
Concentrates without being easily distracted					
Is able to work independently, requiring little direction					
Is persistent in his or her opinions and often self-assertive					
Pursues questions of right and wrong and is concerned with fairness					
Becomes bored easily with repetitious tasks					

Comments: ______________________________

____

Section C	Low	2	3	High	Not Observable
Has an advanced vocabulary and expresses himself or herself well					
Knows a great deal about many things					
Is a keen and alert observer and usually "sees more" or "gets more" out of a story, film, etc., than others do					
Reads many books on various topics					
Uses media effectively as a source of information					
Reasons things out for himself or herself					
Is interested in issues such as race, religion, politics, and the environment					
Is interested and concerned about world problems					
Has a ready grasp of underlying principles and can quickly make valid generalizations about events, people, or things					
Usually prefers advanced-level books, especially biographies					

Comments: ______________________________

____

Appendix 3-8

Student Interest Inventory

Student's name: ______________________________ Grade: ____________

School: ______________________________ Date: ____________

Language(s) spoken: ______________________________

1. Indicate your favourite subject area(s) in school.
2. Indicate what extracurricular activities you participate in that are associated with your school.
3. What clubs or organizations do you belong to outside school? (Please include private lessons you take: karate, piano, art, etc.)
4. Name your three favourite TV programs.
5. List your three favourite books and any authors whose works you enjoy.
6. List your favourite section(s) in any newspapers to which your family has subscribed.
7. List your favourite magazines.
8. What games or hobbies do you enjoy?
9. What is your favourite sport?
10. What sports do you play in and out of school?
11. List any awards or prizes you have won.
12. What types of reading do you enjoy? Check all that apply.
    - ☐ Comics
    - ☐ Crafts and games/puzzles
    - ☐ Fairy tales
    - ☐ Historical fiction
    - ☐ History
    - ☐ Human interest
    - ☐ Romances
    - ☐ Science fiction
    - ☐ Space travel
    - ☐ Sports
    - ☐ Short Stories
    - ☐ Others
13. Name a person you consider to be a hero and state why.
14. Name a "true life" character you consider to be interesting and/or your favourite and why.
15. What trips have you taken and what trips would you like to take if you were allowed to choose?
16. List the chores and responsibilities you must carry out at home.
17. What career do you find interesting enough to pursue?
18. What are three things you do best while in school?
19. What are three things you need help with while in school?
20. Do you make friends easily? List three friends whom you consider to be close to you.
21. What subject(s) not offered at your school would you like to take?
22. Is there something about yourself or some special quality you have that you may want to share with your teacher(s) and classmates?

Appendix 3-9

Reflections on Learning Styles

Understanding the learning style differences of their students is a great advantage for teachers. Documenting learning styles in a student's portfolio is beneficial to the student.

Style Preferences

Instructional Styles Preferences	Learning Environment Preferences	Thinking Styles/ Preferences	Expression Style Preferences
• Drill/practice/ rehearsal • Lecture • Discussion/ participation • Guided study (with mentor) • Interest centre • Investigative reports or projects • Role-playing/ simulation dramatization • Learning/games (learning by doing and moving) • Unguided independent study • Unguided independent study	• Inter-intra-personal: – Self-oriented – Peer-oriented – Adult-oriented – Combination of above • Physical: – Time of day/ work hours/time management – Location/ workspace – Mobility – Interaction with others	• Analytic (book smart) • Inventive/creative (idea smart) • Practical/contextual (street smart) • Linguistic intelligence (word smart) • Spatial intelligence (picture smart) • Musical intelligence (music smart) • Logical-mathematical intelligence (number/ reasoning smart) • Bodily-kinesthetic intelligence (body smart) • Interpersonal intelligence (people smart) • Intrapersonal intelligence (self smart) • Naturalist intelligence (nature smart)	• Written • Oral • Manipulative/ building • Discussion • Display/exhibition • Artistic performance/ interpretation • Dramatization/ demonstration • Graphic • Commercial • Service

Source: Adapted by permission from the Talent Indicators Chart in *The Schoolwide Enrichment Model* (Renzulli and Reis 1997).

The following web page provides a quiz that could help both teachers and individual students understand the different learning styles and provide insight into how they can help increase student learning: Seeing, Hearing, and Doing Quiz at www.jobsetc.gc.ca/eng/toolbox/quizzes/quizzes_home.do

Follow-up information on how to use this quiz in the classroom can be found at The University of Western Ontario Student Development Centre website (www.sdc.uwo.ca/learning/index.html?styles).

Appendix 3-10

Modality Strength Checklist

Directions: In each of the 14 sections check off the description that best represents your view of yourself. Check only one column (V, A, or K) for each section. Then total the number of checks for columns V, A, and K. The column with the highest number of checks broadly represents your preferred learning modality.

"I" "HE OR SHE"	V VISUAL	A AUDITORY	K KINESTHETIC
1. Learning style	☐ Learn by seeing; watching demonstrations	☐ Learn through verbal instructions from others or self	☐ Learn by doing, direct involvement
2. Reading	☐ Like description; sometimes stop reading to stare into space and imagine a scene; intense concentration	☐ Enjoy dialogue, plays; avoid lengthy description; unaware of illustrations; move lips or sub-vocalize	☐ Prefer stories when action occurs early; fidget when reading; handle books; not an avid reader
3. Spelling	☐ Recognize words by sight; rely on a configuration of words	☐ Use phonics approach; have auditory word-attack skills	☐ Often a poor speller; write words to determine if they "feel" right
4. Handwriting	☐ Tends to be good, particularly when young; spacing and size are good, appearance is important	☐ Have more difficulty learning in initial stages; tend to write lightly; say strokes when writing	☐ Good initially; deteriorates when space becomes smaller; push harder on writing instrument
5. Memory	☐ Remember faces, forget names; write things down, take notes	☐ Remember names, forget faces; remember by auditory repetition	☐ Remember best what was done, not what was seen or talked about
6. Imagery	☐ Vivid imagination; think in pictures, visualize in detail	☐ Sub-vocalize; think in sounds; details less important	☐ Imagery not important; images that do occur are accompanied by movement
7. Distractibility	☐ Generally unaware of sounds; distracted by visual disorder or movement	☐ Easily distracted by sounds	☐ Not attentive to visual, auditory presentation so seem distractible
8. Problem solving	☐ Deliberate; plan in advance; organize thoughts by writing them; list	☐ Talk problems out; try solutions verbally, sub-vocally; talk self through problems	☐ Attack problems physically; impulsive; often select the solution involving the greatest activity

"I" "HE OR SHE"	V VISUAL	A AUDITORY	K KINESTHETIC
9. Response to periods of inactivity	☐ Stare, doodle, find something to watch	☐ Hum; talk to self or others	☐ Fidget; find reasons to move; hold up hand
10. Response to new situations	☐ Look around; examine structure	☐ Talk about situations, pros and cons, what to do	☐ Try things out; touch, feel, manipulate
11. Emotionality	☐ Somewhat repressed; stare when angry; cry easily; beam when happy; facial expression is a good index of emotion	☐ Shout with joy or anger; blow up verbally but soon calm down; express emotion verbally and through changes in tone, volume, pitch of voice	☐ Jump for joy; hug, tug, and pull when happy; stamp, jump, and pound when angry; stomp off; general body tone is a good index of emotion
12. Communication	☐ Quiet; do not talk at length; become impatient when extensive listening is required; may use words clumsily; embellishment; use words such as **see**, **look**, etc.	☐ Enjoy listening but cannot wait to talk; descriptions are long but repetitive; like hearing self and others talk; use words such as **listen**, **hear**, etc.	☐ Gesture when speaking; do not listen well; stand close when speaking or listening; quickly lose interest in detailed verbal discourse; use words such as **get**, **take**, etc.
13. General	☐ Neat, meticulous, like order; may choose not to vary appearance	☐ Matching clothes not so important; can explain choices of clothes	☐ Clothes neat but soon become wrinkled through activity
14. Response to the arts	☐ Not particularly responsive to music; prefer the visual arts; tend not to voice appreciation on art of any kind but can be deeply affected by visual displays; focus on details and components rather than on the work as a whole	☐ Favour music; find less appeal in visual art but am readily able to discuss it; miss significant detail; do not appreciate the work as a whole; able to develop verbal association for all art forms; spend more time talking about pieces than looking at them	☐ Respond to music by physical movement; prefer sculpture; touch statues and paintings; at exhibits, stop only at those in which one can become physically involved; comment very little on any art form
Total checks in each column (combined total must equal 14)			
	V _____	A _____	K _____

Preferred learning modality is ______________________________

Source: *Cognitive Coaching Learning Guide*, Highlands Ranch, Colorado 2009. Reproduced with permision.

Appendix 3-11

Learning Preferences

There are different ways to learn. Indicate your learning preference by placing a number in the circles: 1 = Always, 2 = Sometimes, 3 = Seldom.

I prefer learning by ...

○ reading books and magazines
○ listening to a person talk or audio recording
○ watching people do things
○ watching films, TV, or movies
○ putting things together and taking them apart
○ experimenting with things
○ playing a game
○ acting out

I prefer working ...

○ alone
○ with a friend
○ with an adult
○ in a group
○ for a long period
○ for a short period
○ in the morning
○ in the afternoon
○ in the evening

I prefer sharing by ...

○ telling about it
○ building something about it
○ acting out
○ writing about it
○ drawing or painting about it
○ talking to other people about it

Source: Edmonton Public Schools 2000. Reproduced by permission.

Appendix 3-12

Learning Channels Inventory

Place the numbers 1, 2, or 3 in the box after each statement to best indicate your preference:
3 = Often, 2 = Sometimes, 1 = Seldom.

1. I can remember something best if I say it out loud. ☐
2. I prefer to follow written instructions rather than oral ones. ☐
3. When studying, I like to chew gum, snack, or play with something. ☐
4. I can remember things best when I see them written out. ☐
5. I prefer to learn through simulations, games, and/or role-playing. ☐
6. I enjoy learning by having someone explain things to me. ☐
7. I learn best from pictures, diagrams, and charts. ☐
8. I enjoy working with my hands. ☐
9. I enjoy reading, and I read quickly. ☐
10. I prefer to listen to the news on the radio rather than read it in the newspaper. ☐
11. I enjoy being near others. (I enjoy hugs, handshakes, and touches.) ☐
12. I listen to the radio, tapes, and recordings. ☐
13. When asked to spell a word, I simply see the word in my mind's eye. ☐
14. When learning new material, I find myself sketching, drawing, and doodling. ☐
15. When I read silently, I read every word to myself. ☐

In order to get an indication of your learning preference, add the numbers in the boxes together for the following statements:

Visual preference score	2 ☐	4 ☐	7 ☐	9 ☐	13 ☐	= Total ________
Auditory preference score	1 ☐	6 ☐	10 ☐	12 ☐	15 ☐	= Total ________
K/T (kinesthetic/tactual) score	3 ☐	5 ☐	8 ☐	11 ☐	14 ☐	= Total ________

The highest score indicates that my learning preference is ______________________________

Now that I know what my dominant learning style is, I can ______________________________

Source: Max Coderre in *Programming for Students with Special Needs* (Alberta Learning 2000).

Appendix 3-13

Learning Styles: Teacher Observation Checklist

Sound

- ☐ does quality work during quiet work time periods
- ☐ does quality work during regular work time
- ☐ does quality work with music in the background
- ☐ complains when there is too much sound
- ☐ has difficulty remaining quiet during quiet work time
- ☐ makes sounds or noises when working
- ☐ reminds other to be quiet when working

Classroom Design

- ☐ has difficulty sitting properly
- ☐ enjoys lying down while listening to stories
- ☐ sits correctly during work periods
- ☐ stands by work area during work periods

Structure

- ☐ likes to complete work projects independently
- ☐ likes to complete work projects step by step
- ☐ keeps work area neat
- ☐ tends to misplace supplies

Social Tendencies

- ☐ likes to work or play in a group
- ☐ likes to work or play with a teacher nearby
- ☐ likes to work or play alone

Responsibility

- ☐ completes projects quickly and neatly
- ☐ completes projects quickly but not neatly
- ☐ completes projects slowly but neatly
- ☐ completes projects slowly but not neatly
- ☐ does not always complete projects
- ☐ works best when given specific instructions
- ☐ cleans up work area after completing a task
- ☐ needs reminding to clean up work area
- ☐ easily distracted while working on a project
- ☐ remembers assignments

Mobility

- ☐ leaves chair frequently during work
- ☐ often makes excuses to move around the classroom
- ☐ is extremely active during free-play periods

Motivation

- ☐ works best with assurance from others
- ☐ needs teacher feedback while working
- ☐ works best when allowed to be creative
- ☐ initiates projects
- ☐ volunteers information about projects and discussion projects

Perception

- ☐ enjoys books and film strips
- ☐ is attentive during the story
- ☐ likes to listen to records or tapes during work time
- ☐ remembers what others say
- ☐ likes to visit classmates
- ☐ enjoys playing with toys and small pieces
- ☐ likes to draw or doodle
- ☐ likes to move around during work or play
- ☐ likes to create and react to play situations

Source: Alberta Learning 2000. (Reprinted with permission. Copyright 1993. National Association of Elementary School Principals. All rights reserved.)

Appendix 3-14

Multiple Intelligences

How to Teach or Learn Anything Eight Different Ways

Source: Used with permission from Thomas Armstrong (2010), www.thomasarmstrong.com/multiple_intelligences.htm.

One of the most remarkable features of the theory of multiple intelligences is how it provides eight different pathways to learning. If a teacher is having difficulty reaching a student in the more traditional linguistic or logical ways of instruction, the theory of multiple intelligences suggests several other ways in which the material might be presented to facilitate effective learning. Whether you are a kindergarten teacher, a graduate school instructor, or an adult student seeking better ways of pursuing self-study on any subject of interest, the same basic guidelines apply. Whatever you are teaching or learning, see how you might connect with the following:

- words (linguistic intelligence)
- numbers of logic (logical-mathematical intelligence)
- pictures (spatial intelligence)
- music (musical intelligence)
- self-reflection (intra-personal intelligence)
- a physical experience (bodily-kinesthetic intelligence)
- a social experience (interpersonal intelligence)
- an experience in the natural world (naturalist intelligence)

For example, if you're teaching or learning about the law of supply and demand in economics, you might read about it (linguistic), study mathematical formulas to express it (logical-mathematical), examine a graphic chart that illustrates the principle (spatial), observe the law of the natural world (naturalist) or in the human world of commerce (interpersonal), examine the law in terms of your own body (e.g., when you supply your body with lots of food, your stomach's demand for food goes way down; when there's very little supply, your body's demand for food goes way up and you get hungry) (bodily-kinesthetic and intra-personal), and/or write a song (or find an existing song) that demonstrates the law (e.g., Dylan's "Too Much of Nothing").

You don't have to teach or learn something in all eight ways; just see what the possibilities are and then decide which particular pathways interest you the most or seem to be the most effective teaching and learning tools. The theory of multiple intelligences is so intriguing because it expands the horizon of available teaching/learning tools beyond the conventional linguistic and logical methods used in most schools (e.g., lectures, textbooks, writing assignments, formulas). To get started, put the topic you're interested in teaching or learning about in the centre of a blank sheet of paper and draw eight straight lines or "spokes" radiating out from this topic. Label each line with a different intelligence. Then start brainstorming ideas for teaching or learning that topic and write down ideas next to each intelligence. (This is a spatial-linguistic approach to brainstorming; you may want to do this in other ways as well, like using a tape recorder, having a group brainstorming session, etc.)

Appendix 3-15

Issues on Gender Equity

Gender is a socially constructed concept. A person's gender identity is influenced by society's norms and expectations. In the process of gender socialization an individual learns ways to act that fit with the acceptable societal norms for men and women. Gender socialization consists of beliefs and practices that influence the development of self-concept and identity and how an individual is viewed by others. Gender stereotypes consist of specific labels, expectations, interpretations, and behavioural guidelines that are different for males and females. Stereotypes can be limiting and damaging to both genders.

We are born either male or female, but we become gendered. This process is called genderization: the process of learning what our society considers to be masculine and feminine. A student's gender does impact his or her educational career, and his or her social development in an educational setting.

Almost from birth females find themselves in a world of limiting stereotypes and barriers to achievement. Research has identified external barriers that seem to negatively influence the development of talents and gifts in some gifted girls and women. Research has found that while teachers are usually able to identify gifted boys, they are often surprised to learn that a girl is considered intellectually gifted. Gifted girls are very successful at hiding their intelligence and in silencing their voices. It has been repeatedly shown in research that adults, both teachers and parents/guardians, underestimate the intelligence of girls. Both male and female teachers regarded smart boys as more competent than gifted girls in critical and logical thinking skills and in creative problem-solving abilities, while they thought smart girls were more competent in creative writing. Teachers have been found to believe and reinforce one of the most prevalent gender stereotypes: that males have more innate ability while females must work harder.

Girls may internalize these lowered expectations very early in life. The self-confidence and self-perceived abilities of gifted girls steadily decrease from the elementary grades through high school. By early adolescence gifted girls begin to perceive that giftedness in females is undesirable. Between the ages of 12 and 14 is a critical time for gifted girls; they experience a shift in their values, reflecting their strong needs for belonging and love. Peer values become more important, giving them less energy for intellectual pursuits. They also experience a change in society's attitudes toward girls. In adolescence, attractiveness to boys and being well-liked and popular are considered more important for girls.

External barriers include stereotyping and others' expectations. These barriers include the role of school and the environment in general as well as the need to develop a set of philosophical beliefs that is essential to the development of creative and academic potential. In a society in which the majority of our leaders, politicians, artists, musicians, and inventors are male, a young female may not develop a philosophical belief about her own creative potential. Gifted girls may hold back their efforts or dampen their enthusiasm because they have a very strong need to please others. Many females tend to make decisions out of consideration of responsibilities in relationships and an ethic of care. As gifted girls become older and decide to have families, they often lower their aspirations for educational attainment, causing them to be chronically under employed as adults.

Gifted boys and gifted girls are more alike than different. They share similar sets of intellectual, emotional, and social characteristics and needs. Many of their gender issues are similar, but there are important differences as well.

Being identified as gifted or talented may create social problems for females. Some research indicates that gifted girls believe it is a social disadvantage to be smart because of the negative reactions of peers. Fearing their peers' disapproval, bright young women may deliberately understate their abilities in order to avoid being seen as physically unattractive or lacking in social competence.

Gifted boys are often described as possessing psychological androgyny. This means that they possess many qualities that are considered "feminine" qualities, such as emotionality and sensitivity. Gifted girls are also described as androgynous, because they possess qualities and traits that are considered "masculine," such as assertiveness, competitiveness, and a strong will and belief in one's self.

Societal notions of masculinity and femininity are apparent in how people expect girls and boys to behave. It is generally more acceptable for girls to be tomboys than for boys to be highly sensitive. For example, girls who prefer "masculine" play and clothing are more easily accepted than boys who prefer "feminine" play and clothing. In fact, tomboys are more likely to continue their interest in competitive sports and are more likely to have leadership skills. They are considered to be strong. Boys who prefer passive, quiet pursuits like reading, art, or drama are considered more "feminine" and, therefore, weaker than other boys.

Societal myths, stereotypes, and expectations for being masculine include the pressure to conform to the popular masculine traits of silence and strength, an over emphasis on intelligence, and an inability to cope with emotions. By trying to be completely "masculine" rather than androgynous, gifted boys limit their self- and role-identities as well as their right and capacity to express emotions. Gifted boys often feel they have to conform to a male stereotype that means being tough, independent, aggressive, self-reliant, logical, unemotional, and lacking in sensitivity. Not learning to express emotions forces limitations upon creativity and intuition. Gifted boys, especially artistically and creatively gifted boys, tend to be open, caring, and sensitive.

Many gifted boys begin to purposefully underachieve when they realize that being smart is not "cool" among their peers: previously, they have been friendly and mild mannered, high achieving and productive; then, suddenly, they stop doing homework and their grades suffer. This could be a way of establishing independence and individuality. It could be to avoid the teasing of other boys for getting good grades or being a "teacher's pet." It could be that they are trying to separate themselves from being associated with learning or achieving at school as a "girl thing" and thus not a "manly" pursuit.

For gifted boys socializing can become problematic because of their interests, intensity, and sensitivity. It may be hard for them to find other boys who share their interests. Young gifted boys may have extreme difficulty relating to children who are not at their own developmental level. They think the games of average children are "silly" or "babyish." Their own games tend to be highly organized and sophisticated. If the other children cannot relate to their games, or if they laugh at them or reject them, they conclude that there is something wrong with them. Because gifted boys can be unusually sensitive, they take the teasing and criticism of others to heart and begin to develop a protective veneer to place some distance between themselves and other children in hopes that they won't be hurt as easily. This scenario is even more likely in the sensitive, artistic boy who is perceived as "feminine" and teased mercilessly for his lack of "manliness." So they do not become victims of other boys' cruelty, gifted boys may keep their unusual interests a secret and pretend to be les smart or less sensitive than they are in order to gain the approval and acceptance of their male friends.

Gifted boys may have difficulty in the early grades of school because of the lack of male role models and because of female teachers' expectations for their behaviour. Teachers in elementary school are predominantly women and tend to be role models for girls. Girls use school success skills more readily, tend to be more compliant, and exhibit better organizational skills than boys. Teachers often expect gifted boys to behave better than other boys and more like gifted girls.

Gifted girls receive many mixed messages concerning their achievement and femininity. They are encouraged to achieve their full potential, but they are also encouraged to be feminine and discouraged from achieving too much or from achieving in a manner that interferes with attracting marriage partners.

There has been a great deal of research done in recent years about the equitable treatment of boys and girls in our schools. To learn more about the results of these studies, check out the following website:
http://teachertech.rice.edu/Participants/mborrow/GenderEquity/geeqlist.html

Section 4

Schoolwide Programming Options

"A rising tide lifts all ships."

– Joseph Renzulli

Section 4: Schoolwide Programming Options

It is essential that schools plan for enrichment activities throughout the school year to offer a balance of learning opportunities. To ensure the success of schoolwide enrichment it is recommended that schools create an enrichment team.

An enrichment team is an invaluable support for teachers in organizing and planning extensions of learning for students. Ideally, such a team could be made up of the school principal, teachers, parents/guardians, community participants, and students as they know the resource base of the school community and will act as a catalyst for enrichment opportunities at the school level and classroom level.

Teachers should consider what kinds of enrichment experiences enhance student learning. A planning guide may help teachers and the enrichment team to track their school programming experiences and activities. (See Appendix 4-1: A Planning Guide)

Schools could also consider an enrichment professional learning community and/or embedding enrichment in the school accreditation process.

Schoolwide Enrichment

The Schoolwide Enrichment Model (Renzulli and Reis 1997) identifies, develops, and supports the gifts and talents of all students through a broad range of opportunities and experiences and is congruent with Nova Scotia's inclusive educational philosophy and policies. As a result of enrichment opportunities and experiences, some students will be identified as requiring additional programming options in response to their demonstrated gifts and talents.

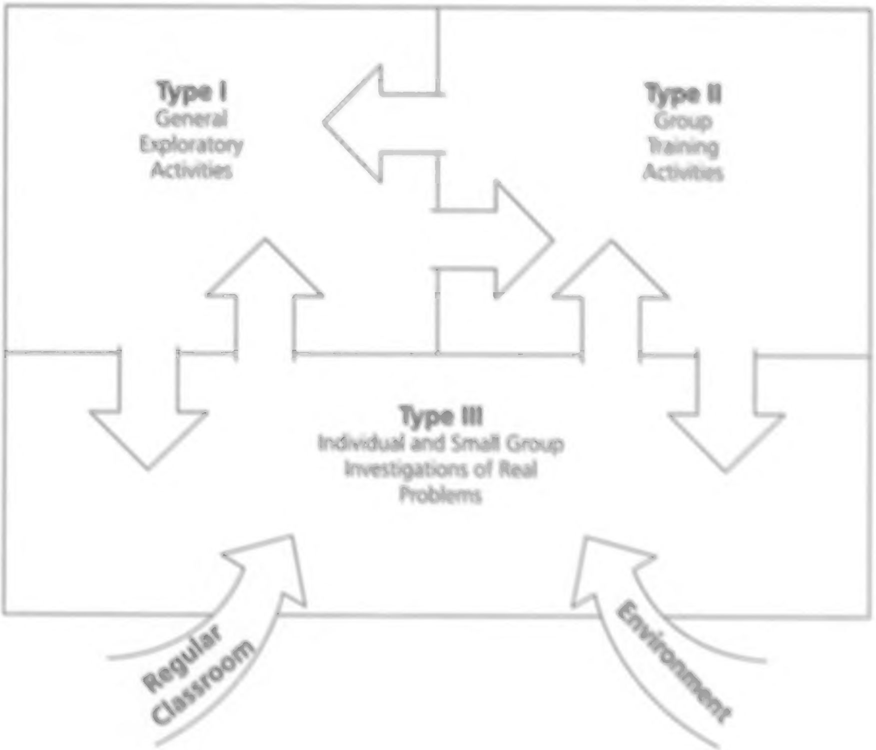
Schoolwide enrichment is comprised of a systematic set of specific strategies that may include a combination of the following components:

- **Enrichment clusters:** groups of students across grades with self-identified similar interests working together in a specially designated time block (six to eight weeks) to produce a product, performance, or targeted service for an appropriate audience (*See Challenge for Excellence: Enrichment Clusters DVD,* Nova Scotia Department of Education, 2005, and Appendix 4-2: Community Resources Survey.)
- **Academies of inquiry and talent development:** secondary school level enrichment clusters that focus on advanced content and processes within an identified discipline for an extended period of time
- **Schoolwide Enrichment Model: Enrichment Triad** (Renzulli and Reis 1997): The concept of enrichment teaching and learning that follows these three basic principles:
  - Each learner is unique.
  - Learning is more effective when students enjoy what they are doing.
  - Student learning is more meaningful and enjoyable when
- content and process are learned within the context of a real and present problem
- knowledge and thinking skill acquisition is enhanced using broad-based themes and multidisciplinary units of study

The goals of enrichment teaching and learning include

- increased learning, challenge, success, and academic achievement
- enhanced intrinsic motivation for learning
- improvements in self-directed learning behaviours
- refinement of analytical, critical, creative, and problem-solving skills
- escalated levels of talent development

The Enrichment Triad Model is comprised of a purposeful program and sequence of enrichment activities designed to stretch the curriculum and challenge students to explore related areas and interests. (pictured and discussed below)


Type I
General
Exploratory
Activities
Type II
Group
Training
Activities
Type III
Individual and Small Group
Investigations of Real
Problems
Regular
Classroom
Environment

(Renzulli and Reis 1997)

Type I Enrichment: General Exploratory Activities

Type I enrichment includes exploratory activities that are introductory and event-oriented and designed for all students. Type I activities and experiences should be considered as part of the identification process. They are designed to help uncover hidden talents, develop new talents, and identify student potential. Consideration must be given to the variety of student interests and talents when organizing Type I activities.

Students with talent or potential for talent (identified through Type I exposure) may then move on to Type II or Type III activities, depending on individual readiness, interests, and personal motivation. (Appendix 4-1: A Planning Guide for School Programming provides a possible matrix for Type I planning.)

Type II Enrichment: Group Training Activities

Type II enrichment builds on the identified abilities and potential for performance. It includes individual or small group activities that are designed to build skills that are oriented to methods and materials (including research, thinking, problem-solving, and how-to skills). (Many of these are explored in Section 5: Classroom Programming Options.) Type II activities provide opportunities for students to gain the skills that may be required to carry out Type III investigations.

Type III Enrichment: Individual and Small Group Investigations of Real Problems

Type III enrichment includes in-depth independent study of authentic problems that are product and audience oriented (advanced investigative projects based on student interests and strengths).

SUGGESTED READING

- *Schoolwide Enrichment Model* (Renzulli and Reis 1997)

Products become relevant when students are dealing with real problems they care about. They should determine problems or issues that professionals in the field think are important and would study themselves. Students should develop timelines for completing components as well as the whole task. During the process students should be looking to produce original thoughts and ideas. The product should be shared with an audience who can appreciate and/or learn from what the students create. In order to ensure appropriate evaluation, both the product and process of its development should be evaluated both by the student who created it and by the product's audience, using previously established "real world" criteria appropriate to the product.

Students take more care in developing their products when they are intended for audiences beyond the classroom. Products for real audiences include the following:

- letters to the editor and articles in the local newspaper
- students' work displayed on a web page or published in a children's magazine
- displays in public places (e.g., malls, banks, shop windows, parks, dentists'/doctors' offices)

- presentations to appropriate local groups (e.g., city council, historical society, naturalists' society)
- artistic performances for the public (e.g., senior citizens)
- storytelling in a library or bookstore or the creation of oral history tapes for the library
- invention fairs
- a televised student panel discussion of a community problem
- student business plans reviewed by the business community
- a dramatization of an issue for the community

Total Talent Portfolio

The Total Talent Portfolio (TTP) (Purcell and Renzulli 1998) is a systematic compilation of information and evidence, in a variety of formats and gathered from multiple sources, that demonstrates students' abilities, interests, and preferred learning styles. The TTP is reviewed and updated regularly, providing an accurate student portrait with a deeper understanding of each student as a learner.

TTPs are intended to

- provide a holistic portrait of student accomplishments, abilities, interests, and strengths
- provide individual student profiles to help teachers make decisions regarding curriculum and instruction
- support student transitions throughout school years
- develop student autonomy in charting individual progress and setting goals
- provide documentation to parents/guardians, enabling their active involvement in their child's academic and talent development
- assist school-based teams or committees in planning and creating options and opportunities

The Schoolwide Enrichment Model focuses on ongoing enrichment activities for all students through high levels of engagement and the use of enjoyable and challenging learning experiences that are constructed around students' interests, learning styles, and preferred modes of expression. It is important to note that formal or informal enrichment programming opportunities occur frequently throughout the school year and often lead to the identification of students with gifts and talents and opportunities to develop them.

SUGGESTED DVD

- *Challenge for Excellence: Total Talent Portfolio DVD* (Nova Scotia Department of Education 2006)

> "Creative productive giftedness describes those aspects of human activity and involvement where a premium is placed on the development of original ideas, products, artistic expressions, and areas of knowledge that are purposefully designed to have an impact on one or more target audiences."
>
> – Joseph Renzulli

Enrichment Events and Activities for Students

Many schools have opted to challenge students on a schoolwide basis through the incorporation of seminars (lunch and learn), schoolwide challenges such as mind benders or math challenges, guest speakers, learning centres, workshops, science fairs, and knowledge festivals. Getting students involved in the planning and implementation of schoolwide challenges may be a good way to identify student leaders who could be referred to the Premier's Power of Positive Change Award program.

Section 4 Appendices

4-1: A Planning Guide........ 97
4-2: Community Resources Survey........ 98
4-3: Survey Follow-up........ 102

Appendix 4-1

A Planning Guide

The following chart may be used by the school enrichment team in planning school-based activities or by individual classroom teachers in recording classroom experiences.

Source: Used by permission from Renzulli 1997.

Type 1 Planning Guide									
Check all that apply: ☐ General matrix ☐ Grade level ☐ Subject area ☐ Methods of delivery									
I. Resource People									
Speakers									
Mini-courses									
Demonstrations									
Artistic performances									
Panel discussions/debates									
Other									
II. Media									
Films									
Film strips									
Slides									
Audiotapes/records									
Videotapes									
Television programs									
Newspaper/magazine articles									
Other									
III. Other Resources									
Interest development centres									
Displays									
Field trips									
Museum programs									
Learning centres									
Other									

Appendix 4-2

Community Resources Survey

Source: Adapted by permission from Renzulli and Reis 1997.

The following sample letter is designed to invite the community to work with the school in extending learning opportunities for all students.

School Name
Address
Phone
Email

Schoolwide Enrichment Program

Dear parents/guardians and community members:

Our school is embarking on a schoolwide enrichment program in order to bring to our students a wide variety of enrichment experiences. We need your help and enthusiasm!

We are asking you to share with us your expertise, experiences, interests, talents, and skills.

Through your support, our students will encounter rich and rewarding school experiences that will extend their learning beyond traditional classroom settings. Traditional classroom settings and curriculum often cannot meet the intensive interests and unique abilities of many of our students. An adult role model, either as a classroom presenter or as a mentor for a particular student, will enhance the learning environment of the school.

We believe the experience will be a rewarding one for all concerned.

Please consider the attached survey as **your invitation** to become involved in your school community. Should you require any further information, please feel free to contact us at the phone number/address above.

Sincerely yours,

Community Resources Survey

Please check any areas listed below which reflect interests, skills, and talents that you would be willing to share with our students.

Language Arts

- ☐ Advertising
- ☐ Authors
- ☐ Bookmaking
- ☐ Broadcasting
- ☐ Cartooning
- ☐ Communication
- ☐ Conversation
- ☐ Debating
- ☐ Etymology
- ☐ Foreign languages
- ☐ Game design
- ☐ Handwriting/graphology
- ☐ Interviewing
- ☐ Journalism
- ☐ Legends
- ☐ Letter writing
- ☐ Libraries
- ☐ Linguistics
- ☐ Literature/drama
- ☐ Media studies
- ☐ Myths
- ☐ Newspapers
- ☐ Oral history
- ☐ Philosophy
- ☐ Play writing
- ☐ Poetry
- ☐ Polling
- ☐ Propaganda
- ☐ Public speaking
- ☐ Publishing
- ☐ Shakespeare
- ☐ Sign language/deaf Culture

Science

- ☐ Agriculture/farming
- ☐ Alternative medicine
- ☐ Anatomy
- ☐ Animals
- ☐ Aquaculture
- ☐ Astrology/stars
- ☐ Astronomy
- ☐ Biology
- ☐ Biorhythms/chronobiology
- ☐ Birds
- ☐ Botany
- ☐ Chemistry
- ☐ Conservation
- ☐ Dinosaurs
- ☐ DNA fingerprinting
- ☐ Ecology
- ☐ Electronics
- ☐ Energy
- ☐ Environment
- ☐ Fish
- ☐ Forestry
- ☐ Fossils
- ☐ Genetics
- ☐ Health/medicine
- ☐ Human body
- ☐ Insects
- ☐ Inventions
- ☐ Metals
- ☐ Microscopes
- ☐ Natural resources
- ☐ Nature study
- ☐ Nutrition
- ☐ Oceanography
- ☐ Optics
- ☐ Outdoor education
- ☐ Outer space/aeronautics
- ☐ Phobias/fears
- ☐ Physics
- ☐ Pollution
- ☐ Reptiles
- ☐ Robots
- ☐ Rocks/minerals
- ☐ Science olympics
- ☐ Scientists
- ☐ Snakes
- ☐ Weather
- ☐ Wildlife
- ☐ Women in science

Social Studies

- ☐ Alcohol and drugs
- ☐ Anthropology
- ☐ Anti-racism
- ☐ Archaeology
- ☐ Black history
- ☐ Canadian government
- ☐ Canadian history
- ☐ Canadian peoples
- ☐ Child abuse
- ☐ City planning
- ☐ Crime/criminology
- ☐ Current events
- ☐ Death/dying
- ☐ Ethics
- ☐ Ethnic heritage
- ☐ Families
- ☐ Famous people
- ☐ Festivals/holidays
- ☐ Foreign policy
- ☐ Genealogy
- ☐ Geography
- ☐ Maritime studies
- ☐ Mental illness
- ☐ Mi'kmaw history and culture
- ☐ NS history and politics
- ☐ Pollution
- ☐ Psychology
- ☐ Public opinion
- ☐ Pyramids
- ☐ Senior citizens
- ☐ Social problems
- ☐ Special needs children
- ☐ Urban development
- ☐ Women's rights
- ☐ World affairs
- ☐ World travels

Mathematics

- ☐ Accounting
- ☐ Algebra
- ☐ Banking
- ☐ Business
- ☐ Consumerism
- ☐ Economics
- ☐ Elections
- ☐ Geometry
- ☐ Inflation
- ☐ Metric system
- ☐ Money management
- ☐ Probability
- ☐ Statistics
- ☐ Stock market
- ☐ Taxes

Computer Technology

- ☐ Computer programming
- ☐ Bulletin boards
- ☐ Internet
- ☐ Multimedia production

Thinking/Research/Study

- ☐ Brain games
- ☐ Chess
- ☐ Creativity
- ☐ Decision making
- ☐ Deductive/inductive reasoning
- ☐ Human relations
- ☐ Imagination
- ☐ Leadership training
- ☐ Listening skills
- ☐ Logic
- ☐ Memory skills
- ☐ Preparing audio
- ☐ Problem solving
- ☐ Research
- ☐ Simulations
- ☐ Visual materials
- ☐ Visual/performing arts

Visual/Performing Arts

- ☐ Acting
- ☐ Animation
- ☐ Architecture
- ☐ Art history
- ☐ Artists
- ☐ Ballet
- ☐ Broadway
- ☐ Calligraphy
- ☐ Cartooning
- ☐ Choreography/dancing
- ☐ Cinematography/filmmaking
- ☐ Clay
- ☐ Clowns
- ☐ Commercial art
- ☐ Costume design
- ☐ Dramatics
- ☐ Drawing
- ☐ Folk art/music
- ☐ Graphics
- ☐ Makeup design
- ☐ Modern dance
- ☐ Movies
- ☐ Multimedia production
- ☐ Musical instruments
- ☐ Opera
- ☐ Origami
- ☐ Painting
- ☐ Pantomime
- ☐ Photography
- ☐ Play production
- ☐ Puppetry
- ☐ Radio show
- ☐ Television
- ☐ Theatre

Recreation

- ☐ Aerobics
- ☐ Archery
- ☐ Backpacking
- ☐ Beekeeping
- ☐ Boating
- ☐ Bicycles
- ☐ Camping
- ☐ Cars
- ☐ Coins/stamps
- ☐ Community theatre
- ☐ Crafts
- ☐ Gardening
- ☐ Horses
- ☐ House plants
- ☐ Kites
- ☐ Magic
- ☐ Martial arts
- ☐ Model building
- ☐ Orienteering
- ☐ Pets
- ☐ Sailing
- ☐ Scuba diving
- ☐ Sports
- ☐ Toys
- ☐ Treasure hunting
- ☐ Woodworking

Careers

Please list below any career or occupation you would be willing to share with students.

Other

Is there any other information about your career, travels, education, cultural experiences, hobbies, publications, collections, competitions, community activities, politics, research, pet projects, or special interests that you are willing to share with us?

Source: *The Schoolwide Enrichment Model*; adapted by permission from Renzulli and Reis 1997.

Appendix 4-3

Survey Follow-up

Source: Renzulli and Reis 1997.

Thank you for responding to our Community Resources Survey.

Since you have expressed an interest in sharing some of your talents and interests with us, we would like to know which format of presentation you would find most suitable.

Please choose from the options below.

- ☐ I am willing to conduct a 45-minute lecture/discussion/demonstration with groups of interested students.
- ☐ I am willing to teach a short workshop for a small group of interested students.
- ☐ I am available for a phone conference with a student who shares my interest(s).
- ☐ I am willing to have a private conference with a student who shares my interest(s).
- ☐ I am willing to have interested student(s) visit me at my place of business/home.
- ☐ I am willing to answer written correspondence from a student who shares my interest(s).
- ☐ I am willing to commit to 10 or more hours to serve as a mentor for a student who shares my interest(s).
- ☐ I am willing to help serve as an evaluator of a student's project in a mutual interest area.
- ☐ I can suggest other resource people and organizations in my interest area(s).
- ☐ I am available online (via computer) for conferencing with a student who shares my interest(s).
- ☐ Other: ____________________

Name: ____________________

Home address: ____________________

____________________ Postal code: ____________________

Place of business: ____________________

Telephone no. (business): ____________________ (home): ____________________

Email: ____________________

Please note: School board policy may require a background/criminal record check.

OFFICE USE ONLY
Resource areas:

Section 5

Classroom Programming Options

"Enrichment activities should encourage students to ask questions, make generalizations, and go beyond the original problem."

– Linda Sheffield

Section 5: Classroom Programming Options

Classroom teachers provide for many of the unique intellectual, artistic, creative, and leadership needs of gifted learners by using enrichment activities and adapting instructional approaches, assessment strategies, learning environments, and resources. Adaptations for students with gifts and talents ensure that students have opportunities to develop to their maximum potential.

Programming for students with gifts and talents must be driven by their learning needs. This appropriate programming is the application of good design, instruction, and assessment practices to meet the enhanced capacities of the exceptional learner. The following guidelines will assist classroom teachers in developing programming and services to meet the needs of gifted learners.

Programming Guidelines

Programming should

- be developed to address the academic needs of individual students
- use the learning outcomes framework as a base for enrichment and extension activities
- be comprehensive, structured, and sequenced
- be an integral part of the student's school experience
- consider the social and/or emotional needs of the student
- take full advantage of the special talents and interests of the teaching staff and the local community
- be facilitated by a school-based team that supports the process (e.g., arranging flexible scheduling, planning time)

With these guidelines in mind, the following strategies will assist classroom teachers in changing the dynamics of the classroom to meet the unique needs of their gifted students.

Differentiation of Curriculum, Instruction, Assessment, and Environment

Differentiation is a process teachers use to enhance learning in order to improve the match between the student's unique characteristics and various curriculum components. Differentiation is a proactive approach incorporating appropriate classroom management skills, varied pedagogy, pre-assessment, flexible small grouping, access to support personnel, and the availability of appropriate resources, all of which are provided in an environment that feels safe to all students. This tailoring of teaching environments and practices creates appropriate learning experiences for all students.

"Differentiation is classroom practice that looks eyeball to eyeball with the reality that students differ and that teachers do what it takes to hook a whole range of students to learning. It's a way of thinking about the classroom, with the goals of honouring each student's learning capacity while developing a solid community of learners." (Tomlinson 2001)

Instruction can be differentiated for students in terms of one or more of the following:

- learning environment: where the student learns
- content/curriculum modification: what the student learns
- process modification (instructional strategies): how the student learns
- product modification: how the student demonstrates what he or she knows

Whenever possible, students should be involved in the choices of learning environment, content, process, and product.

Four main characteristics shape teaching and learning in a differentiated classroom:

- Instruction is focused on key concepts and understandings.
- Ongoing assessment of student readiness and growth are built into the curriculum.
- Flexible grouping is consistently used.
- Students are active explorers in a student-centred classroom.

Differentiation for gifted students presents additional considerations, such as

- providing complex and stimulating learning experiences
- providing appropriately challenging work
- exploring the content in greater breadth and depth
- helping gifted students use their time productively

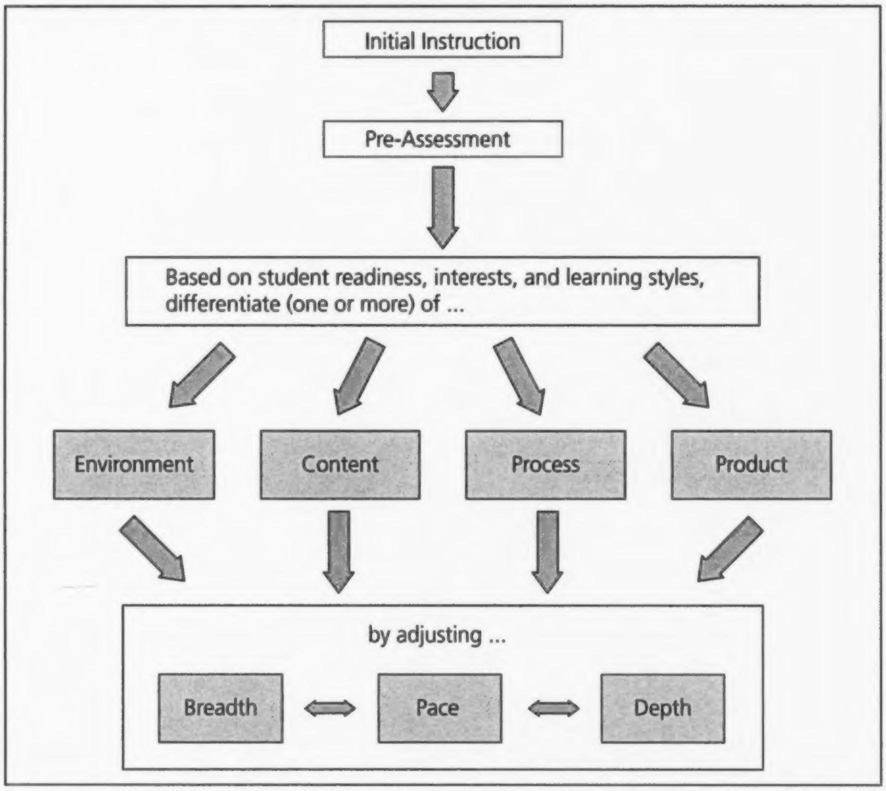
Principles of Differentiation for Gifted Learners

- presenting content that is related to broad-based issues, themes, or problems
- integrating multiple disciplines
- presenting comprehensive, related, and mutually reinforcing experiences
- allowing for in-depth learning of a self-selected topic
- focusing on open-ended tasks
- developing research skills and methods
- integrating basic skills and higher-level thinking into the curriculum
- encouraging the development of products that challenge existing ideas and produce "new" ideas
- encouraging the development of products that use new techniques, materials, and forms

- developing independent or self-directed study skills
- encouraging the development of self-understanding
- developing productive, complex, abstract, and/or higher-level thinking skills
- evaluating student outcomes by using appropriate and specific criteria through self-appraisal, criterion-referenced, and/or standardized instruments

The figure below and the explanation that follows it presents an organizer for thinking about differentiation for students with gifts and talents.

Differentiation for Gifted and Talented Students


Initial Instruction
Pre-Assessment
Based on student readiness, interests, and learning styles, differentiate (one or more) of ...
Environment
Content
Process
Product
by adjusting ...
Breadth
Pace
Depth

Initial Instruction

Gifted students cannot be expected to know new material prior to instruction. However, it can be expected that they will acquire knowledge and understanding at a faster pace than other students. Consequently, there should be some initial instruction prior to pre-assessment.

Pre-assessment

When beginning a new unit of study, it is important to determine what all students already know and can do. This may help a teacher focus the delivery of the curriculum to make the best use of students' prior knowledge. A brief introductory activity should be done to refresh the students' connection to the topic before pre-assessment is used. Pre-assessment should provide an opportunity for students to show what they already know before the unit is taught, including knowledge of content as well as the processes and connections related to the area of study.

Although whole-class brainstorming is often used to determine what students know, it is important to determine the understanding and ongoing questions of individual students. Information about what a student knows and can do may be collected in a variety of ways, depending on the student's preferred learning style. They may include

- 3-2-1 cards
- concept maps
- conferences
- end-of-unit tests
- entry/exit cards
- Frayer Model
- journals
- Knowledge Rating Chart
- K-W-L charts
- lists and/or surveys
- parent/guardian letters
- performances
- products

See Section 5 Appendices for more information and examples.

Environment

The ideal learning environment is student focused, taking into account the students' interests, input, and ideas as well as those of the teacher. The environment welcomes new people, materials, and ideas and encourages non-academic and interdisciplinary connections. It should be an open atmosphere that encourages the acceptance of others' ideas and opinions and includes complexity and a rich variety of resources, media, ideas, methods, and tasks. The optimal learning environment allows movement in and out of groups, desk settings, classrooms, and school.

Content

"Content is what a student should come to know (facts), understand (concepts and principles), and be able to do (skills) as a result of a given segment of study (a lesson, a learning experience, a unit). Content is input. It encompasses the means by which students will become acquainted with information (through textbooks, supplementary reading, videos, field trips, speakers, demonstrations, lectures, or computer programs)." (Tomlinson 1999)

Developing learning opportunities begins with provincial outcomes. Differentiating content means "upping the challenge" for gifted learners, not doing more of the same. Students with gifts and talents may absorb material at a faster pace, work well with abstractions, make learning connections easily, and/or have interests that are more like those of older students.

> "Learning without thought is labour lost; thought without learning is perilous."
>
> – Confucius

Process

Process refers to the students' learning styles and the teacher's instructional strategies. It should focus on encouraging higher levels of cognitive thinking. Students can be challenged through the use of Bloom's Revised Taxonomy (Anderson and Krathwohl 2001), logic problems, critical thinking, and problem solving. The teacher can develop creative-thinking skills through the use of imagination, intuitive approaches, and brainstorming techniques. Debriefing encourages students to be aware of and able to articulate their reasoning and conclusion to a problem or question. Open-ended questioning encourages intellectual risk taking. Flexible grouping arrangements allow for both competitive and co-operative activities, depending on the task and its objective.

Product

Products are student demonstrations of what they know, understand, and/or are able to do. Product assignments must cause students to think about, apply, and expand on all of the key understandings and skills of the learning they represent. They may resemble the products being studied and developed by experts in the field. These could be tangible creations (e.g., posters, essays, models) or demonstrations (e.g., dramatizations, performances, experiments).

Students take more care in developing their products when they are intended for audiences beyond the classroom. Products for real audiences include the following:

- letters to the editor and articles in the local newspaper
- student works displayed on a web page or published in children's magazines
- displays in public places
- presentations to appropriate local groups
- artistic performances for the public
- storytelling in a library or bookstore
- student business plans reviewed by the business community

Curriculum documents provide a comprehensive framework on which teachers can base decisions concerning learning experiences, instruction, student assessment, resources, and program evaluation. They provide flexibility for teachers to plan experiences that meet the diverse needs of their students. "In designing learning tasks for advanced learners, teachers should consider ways that students can extend their knowledge base, thinking processes, learning strategies, self-awareness, and insights." (Nova Scotia Department of Education 1997)

Adjusting the Breadth

One strategy for differentiating is to adjust the breadth of the material to be learned. Adjusting the breadth refers to enrichment through a broader range of *content, tasks,* and *resources.*

Content

The teacher can expand the content presented in the classroom by shifting from facts, definitions, and descriptions to more abstract and complex issues such as larger concepts or big ideas, relationships to and between key concepts, and the development of generalizations. (See Appendix 5-4: Content Complexity.)

Tasks

Tasks should be designed to encourage higher-level thinking and to broaden an understanding of the connections within, between, and related to the learning outcome. For example, students could study individuals, peoples, or events to examine different perspectives, including the reactions to various opportunities or problems. Also, consider having the student use a method of inquiry that professionals in the field would employ.

Resources

Resources can be supplemented using materials that offer choice, variety, and challenge. A broad range of resources should include school and community members, technology, artifacts, etc.

Adjusting the Depth

Altering depth ensures that students with different learning needs work with the same essential ideas and use the same key skills but at different levels of complexity, abstractness, and open-endedness. Tiered instruction is one teaching tool that teachers can use to alter depth. Students work on different levels of activities, all with the same essential understandings or goal in mind. More information on tiered instruction is given later in this section.

Adjusting the Pace

Gifted and talented students are often able to meet learning outcomes at a faster pace and with less instructional repetition. Adjusting the pace can allow students to move through lower-order thinking tasks more quickly and have more time to respond fully on higher-order thinking tasks. Pace is dependent on the interests and readiness of the student as well as the breadth and depth of the learning opportunities provided.

Differentiated Instructional and Management Strategies

Flexible and Purposeful Grouping

Flexible and purposeful grouping arrangements improve the match between the process of instruction and the learner. Providing gifted students with various opportunities to work together is important so that they can interact with others who have similar needs and interests. Groups should be flexible in composition and duration. Group membership may be determined by the teacher or by the students. Grouping can be within the class, between classes, or pull out, depending on the needs of the students and the resources available.

Co-operative learning is a form of within-class grouping in which small group work allows students to support one another during the learning process. While useful for certain learning activities, co-operative groups that always mix ability levels do not always allow gifted students to advance their knowledge and skill level.

Ability groupings are very beneficial for academically gifted students. Teachers can form small high ability groups, based on pre-assessment results, from several classes. They can then vary the instruction to fit the learning goals identified for a specific group. Later, the small instructional groups can remain together to "scaffold" for one another as they participate in learning activities or product development. Small ability groups, or cluster groups, provide gifted students with the support they need to achieve at high levels. Clustering refers to grouping two to five students with gifts and talents in a grade-level-subject-area classroom. Through clustering within the classroom, students can work with differentiated curriculum on a continuous basis. In situations where there are sufficient numbers of students, part-time and/or full-time classes give students the opportunity to come together to learn and explore topics at a pace and complexity commensurate with their abilities.

Gifted students can also benefit from being grouped by interest or learning-style preference. When these are cross-grade pull out groups, they are particularly advantageous for gifted students. In addition, cross-grade-level grouping is useful for the investigation of topics or themes and can extend learning opportunities. It can take place in single or multiple subject areas, using a variety of grouping techniques.

Grouping can be arranged in a variety of configurations, depending on the purpose of the group task. Possible configurations include

- individual students on independent assignments
- whole-group lecture/demonstration/discussion/assignments
- small heterogeneous groups on the same assignment
- small heterogeneous groups on different assignments
- small homogeneous groups on the same assignment
- small homogeneous groups on different assignments
- flexible groups based on interest
- flexible groups based on ability or readiness
- flexible groups based on learning style
- small groups chosen by the students

- convenient small groups
- randomly assigned small groups

Tiered Instruction

Tiered lessons and assignments ensure that students with different learning needs work with the same essential ideas and use the same key skills but at different levels of complexity, abstractness, and open-endedness. As opposed to focusing on learning differences, the focus is on the concept. The teacher decides whether the different tiers will be based on the students' readiness or ability, interest in a topic, or learning-style preferences. A pre-assessment is then given, and a lesson or activity is developed and adjusted into various tasks at different levels of understanding. Tiered assignments are useful because they provide an opportunity for gifted students to generate ideas, reflect on their cognitive needs, work in areas of interest, and develop higher-level thinking skills. (See the appendices in this section for more information on tiered instruction.)

> “The approach seeks to develop high levels of multiple potentials in a broad range of students.”
>
> – Phi Delta Kappan

Anchoring

Another useful tool to use independently or in conjunction with tiered instruction is anchoring. It provides meaningful work for students to work on individually throughout a unit, a grading period, or longer. The curriculum-related activities provide the students with independent work, which can free up the teacher to work with individual students or groups. (See the appendices in this section for more detailed information on anchoring.)

Learning Centres

Learning centres are physical "stations" where students engage in activities designed to extend their learning and thinking. Learning centres are designed to provide a range of opportunities for creative expression and production through the investigation of particular topics and issues. While the centres may not be directly related to curricular outcomes, they introduce students to new possibilities of study. Learning centres are appropriate at any grade level. For the teacher, they provide a way to work with small groups while the rest of the class is engaged in other assignments or centre work. (Armstrong 1994)

Independent Study for Credit

With teacher support and coaching, the student learns how to decide on a focus of study, develop a plan of action, follow it through, and monitor the learning process. The student takes part in developing criteria for evaluation and works with the teacher as a partner. Guidelines and forms are available in Appendix 5-18: Independent Study for Credit: Interim Guidelines and Policy.

> “It takes courage to be creative. Just as soon as you have a new idea, you are a minority of one.”
>
> –Paul Torrance

Mentorships

In meeting the needs of all students, classroom teachers are encouraged to draw on the resources available in the wider educational and business communities. Mentoring can be used to assist students in meeting their learning needs. Professionals and experts in a variety of fields can strengthen student interests and provide positive and exciting role models. Teachers, counsellors, librarians, other students, parents/guardians, and community resource people can become mentors. The relationship with a mentor can help students move to a new level of understanding. It is an opportunity for students to learn how experts in their field of interest go about their work. Students can be introduced to ideas, theories, tools, activities, or careers through a mentor.

Mentors can provide support beyond the classroom. Their encouragement and interest in students' pursuits also provide additional social and emotional support. Arranging formal or informal mentoring relationships and opportunities for gifted and talented students is highly beneficial.

Mentors do not directly teach or evaluate. A mentorship is a helping relationship. Mentorship experiences should go beyond school-like tasks, involving interaction and collaboration in a real-life context. (Casey and Shore 2000)

To find community mentors, schools can use a community resources survey. See appendices 4-2 and 4-3 for a sample survey and follow-up survey.

Acceleration

Acceleration is the practice of enabling students to meet curriculum outcomes at a faster pace or a younger age commensurate with their needs and abilities. Acceleration occurs when a student has progressed beyond age appropriate coursework and/or grade-level groupings. At any point when the students' outcomes are changed, involvement of the program planning team is necessary, especially when an appeal of decision could happen.

There are many forms and levels of acceleration. It may take place within the classroom, within the school, or outside school through

- acceleration by subject or grade
- advanced courses
- Advanced Placement
- challenge for credit
- concurrent/dual enrolment
- curriculum compacting
- early admission to post-secondary study
- extracurricular activities (outside school hours accelerated options for students with an intense and focused interest include camps, institutes, and activities that provide opportunities for mastering challenging material/skills at a fast pace)
- International Baccalaureate
- telescoping

Curriculum Compacting

Curriculum compacting is a technique used to modify and/or streamline the regular curriculum to eliminate repetition of previously mastered material and to upgrade the challenge level of the regular curriculum. It will provide time for appropriate enrichment and/or acceleration activities while ensuring mastery of basic skills. Compacting can dramatically reduce redundancy and free up time for gifted students to engage in active and challenging learning.

A major component of curriculum compacting is pre-assessment of the curriculum outcomes (knowledge and skills) as gifted and talented students may be working beyond grade-level curriculum and expectations. Compacting can be for single units or for larger blocks of time. Once the goals of the curriculum have been determined and the student's mastery has been assessed, enrichment opportunities can be provided.

If it is determined that the student has already achieved, and in fact mastered, the outcome(s) to be reached in a particular unit, there is a need to plan more appropriate outcomes rather than expect the student to practise a basic skill, review his or her work, tutor classmates, or "wait for the others to catch up." For students, the benefits of compacting include the time and opportunity for accelerated learning experiences and enrichment activities.

Eight Steps to Curriculum Compacting (Reis, Burns, and Renzulli 1992)

- Identify the learning objective(s) of the curriculum outcome(s).
- Find or develop a pretesting format.
- Identify students who may benefit from curriculum compacting.
- Pre-test students to their determine prior knowledge.
- Eliminate practice or instructional time.
- Streamline instruction or assignments.
- Offer enrichment or acceleration options.
- Keep records of this process and the instructional options available to students.

Teachers can compact curriculum by attending to three main steps: ***name it***, ***prove it***, and ***change it***.

Name it: Teachers should identify the objectives for a particular unit of study, followed by the collection of data on the student(s)' proficiency in those objectives, including test scores, behavioural profiles, and past academic records.

Prove it: Teachers should detail the assessment methods they select, along with appropriate student results. The assessment instruments can be formal measures, such as pencil and paper tests, or informal measures, such as performance assessments based on observations of class participation and written assignments. Specificity is extremely important since students might show limited mastery of some objectives and high levels of mastery on others. The students will either have to return to class for instruction, when objectives they do not know are covered, or the teacher could ensure that they learn these skills in another way.

Change it: Teachers should record information about replacement strategies, using acceleration or enrichment options. In determining these options, teachers must be fully aware of students' individual interests and learning styles. Teachers should never replace compacted regular curriculum work with harder, more advanced material that is solely determined by the teacher. Instead, students' interests should be taken into account. Teachers should also be careful to help monitor the challenge level of the material that is being substituted. They want students to understand the nature of effort and challenge, and they should ensure that students are not simply replacing the compacted material with simple reading or work that is not advanced.

Completed compactors should be kept in students' cumulative records and updated on a regular basis.

There is a commercially available management form that guides this process. The Compactor Form (Renzulli and Smith 1978) is both an organizational and a record keeping tool. (See Appendix 5-16: Curriculum Compacting Planning Sheet.)

> "The principal goal of education is to create men and women who are capable of doing new things, not simply repeating what other generations have done."
>
> – Jean Piaget

Telescoping

Telescoping is reducing the amount of time allocated for a student to meet learning outcomes. Gifted learners may not need as much time as other learners to attain outcomes. For example, a student may be able to attain outcomes for both the grade 8 and 9 math curriculums in one year. In a "telescoped" curriculum material is not necessarily "skipped" but students move quickly through all material. In this way the needs of one or a number of gifted students may be met by eliminating repetition and considerably increasing the pace of instruction.

Advanced Placement

Advanced Placement (AP) is a program of university/college level courses and exams for high school students. AP courses follow guidelines developed and published by the College Board. It is a not-for-profit membership association whose mission is to connect students to college success and opportunity. AP provides students with the opportunity to take one or more university-level courses while in high school. Each course covers the breadth of information, skills, and assignments found in the corresponding university course. Students who successfully complete external AP exams (with a minimum score of 4 on a 5-point scale) may, upon admission to university/college, be granted credit and/or Advanced Placement at most post-secondary institutions around the world. (Some institutions will also grant credit for a score of 3.)

Concurrent/Dual Enrolment

Concurrent/dual enrolment provides students with the opportunity to take university or community college courses while enrolled full-time in the public school system. Through concurrent/dual enrolment, students may take classes at a post secondary institution for credit toward their high school diploma as well as for university or college credit. There are considerations when deciding to explore concurrent/dual enrolment as a programming option, including creating an agreement between the institutions, ensuring that scheduling works for the student, assisting the student with the transition, and monitoring and assessing the student's progress.

Advanced Courses

The Nova Scotia Department of Education recognizes the importance of providing a wide range of learning experiences to accommodate the diverse needs of senior high students and of promoting equitable access to educational experiences. At the grade 10 level, courses have been developed to provide all students with access to a strong foundation of common educational experiences. These courses engage students in a variety of groupings and interactions as contexts for learning and offer a range of experiences that provide both challenge and support.

To prepare students for a range of post-secondary destinations, grades 11 and 12 programs include course offerings that are increasingly specialized; as such, these grades are referred to as the specialization years. A list of the advanced courses currently offered can be found in the most recent edition of the *Public School Programs.*

Requests for approval of locally developed courses as advanced credits will be evaluated with reference to the *Advanced Courses Interim Policy Guidelines* (Nova Scotia Department of Education, English Program Services) and to the framework provided by the principles of learning, the essential graduation learnings, and the general and specific curriculum outcomes of related public school programs and courses.

The principal of a school that offers advanced courses is responsible for promoting and ensuring equitable access to such courses. Every effort should be made to ensure a diversity of students so that the enrolment in advanced courses reflects the gender balance and the racial, ethnic, and cultural diversity of the school population. Equitable access to and enrolment in advanced courses will be monitored by the school board and reported annually to the Department of Education.

International Baccalaureate

The International Baccalaureate (IB) Diploma Programme is a challenging pre-university course of studies delivered in grades 11 and 12. The program culminates in a series of international exams written in six academic subjects, which are centred around a core consisting of the theory of knowledge course, an original piece of research, and CAS (Creativity, Action, Service: 150 hours of participation in extracurricular activities and community service). The IB program is recognized by all universities in Canada and most in the United States. Through this recognition policy, there is the potential for a student to be granted advanced credits or transfer credits for achieving sufficiently high results. In addition, IB students may be eligible for a range of university scholarships.

Assessment of students' work in each of the six IB subjects includes a written final external examination. In addition, every subject has a coursework component, which may be internally assessed by the teachers. There is an emphasis on oral and written communication, group work, an ability to synthesize information, and analytical skills. IB courses are recognized as advanced courses at grades 11 and 12 and may be credited toward graduation requirements whether taken as part of the complete IB Diploma Programme or as IB certificate courses. Students who successfully complete all of the IB Diploma requirements will earn a Nova Scotia High School Graduation Diploma.

Early Admission to Post-secondary Study

With the co-operation of the university, a student may enter university early. The traditional entrance requirements may be waived in special circumstances.

Challenge for Credit

The Nova Scotia Department of Education recognizes that students may have already acquired the knowledge, skills, and attitudes that an existing course seeks to develop. Challenge for credit provides a process for students to demonstrate that they have achieved learning outcomes as defined in the most recent edition of *Public School Programs* and the curriculum guide for a directly related course. (See Appendix 5-19, *Challenge for Credit.*)

Acceleration by Subject or Grade

In order for acceleration by subject or grade to occur, it is important that school boards develop guidelines whereby teachers and school program planning teams can be guided in this decision-making process. When considering acceleration, through the program planning process the school should consider the following:

- a careful assessment to determine areas in which the prerequisite outcomes may not be complete
- a careful assessment to determine the student's social/emotional and behavioural strengths and challenges
- a trial basis, during which time all parties should meet to decide how well the student is progressing (The consultation should include the student whenever possible.)
- gradual inclusion of the student into the next grade level in a way that is sensitive to or allows for the possibility that the student may not successfully make the transition (Although it is rare that the transition is not successful, precautions must be taken to ensure that the student feels no sense of failure in the process.)

Parents/guardians must be partners in helping to determine what, if any, type of acceleration would be beneficial to their child.

Extracurricular Learning and Talent Development

There are a wide variety of after school, weekend, and summer programs to challenge children and to enhance their learning opportunities. These programs are offered throughout the year by local individuals, community groups, universities, colleges, art galleries, theatres, multicultural organizations, and recreational and sports groups. Educators are encouraged to explore these opportunities for their students.

Higher-Order Thinking

Educators agree that one of the goals of teaching students should be to develop thinking skills to the highest level, reflecting the dynamic interactive relationship between the learner and the material. Higher-order thinking is defined as thinking that progresses in an upward direction. Bloom's Revised Taxonomy is an example of a progression of thinking starting at the knowledge level and moving to evaluation. Analysis, evaluation, and synthesis (the creation of new knowledge) are thought to be of a higher order than learning facts and concepts. Higher-order thinking involves the learning of complex skills such as critical thinking, inquiry, and problem solving. These skills are more difficult to learn and to teach but are more valuable because they are transferable to real-life situations. (See Appendix 5-27: Bloom's Revised Taxonomy Planning Framework for more information on Bloom's Revised Taxonomy.)

SUGGESTED READING

- *Creative Problem Solving: An Introduction* (Treffinger, Isaksen, and Dorval 1994)

Critical Thinking

Critical thinking is the capacity to see relationships methodically. Students can build this capacity within the context of the curriculum and in everyday life in their interactions with the world and with other people.

Through critical thinking, students recognize relationships among the various issues they study across the curriculum, determine their own positions on those issues, and distinguish their positions from those of their classmates and teacher. Learning experiences across the curriculum can assist students in developing habits of mind and attitudes that foster critical thinking. These habits of mind and attitudes include

SUGGESTED WEBSITES

- *Odyssey of the Mind* www.odyssyofthemind.com
- *Future Problem Solving Program* www.fpspi.org

- being accurate and seeking accuracy—seeking precision
- being clear and seeking clarity
- seeking not only factual information but also an understanding of why things are as they are
- seeking and using good reasons for deciding what to believe or do
- using credible sources
- taking into account the total situation
- dealing in an orderly manner with the parts of a complex whole
- maintaining/sustaining a focus—keeping their thinking relevant to the main point and keeping in mind the original or most basic concern
- evaluating statements (what they and others believe) and actions (what they and others do)
- being open-minded to others' points of view—seriously considering points of view other than their own, reasoning from starting points with which they disagree without letting the disagreement interfere with their reasoning, and withholding judgment when the evidence and reason are insufficient

- restraining impulsiveness—not jumping to conclusions but basing actions and beliefs on sound reasoning
- seeking alternatives
- taking a position when the information warrants it and changing a position when the evidence and reasons are sufficient for doing so
- being sensitive to the feelings, level of knowledge, and degree of sophistication of others

Thinking critically involves a number of processes. These include seeking clarity, establishing and making inferences, defining terms, and judging definitions.

Seeking clarity involves providing a focus for the critical-thinking process, analyzing lines of reasoning, and seeking and providing clarification by

- focusing on a question
  - identifying or formulating a question
  - identifying or formulating criteria for judging possible answers
- interpreting the meaning of terms and formulating clear definitions
  - defining terms
  - identifying and handling equivocation
  - identifying unstated and needed assumptions
- analyzing arguments
  - identifying conclusions
  - identifying stated reasons
  - identifying unstated reasons
  - seeing similarities and differences
  - identifying and handling irrelevance
  - seeing the structure of an argument
  - summarizing
- asking and answering questions of clarification and challenge, for example,
  - Why?
  - What is your main point?
  - What do you mean by . . . ?
  - What would be an example?
  - What would not be an example but be close to one?
  - How does that case, which you seem to be offering as a counter-example, apply to this situation?
  - What difference does it make?

> Problems cannot be solved at the same level of consciousness that created them!
>
> – Albert Einstein

- What are the facts?
- Is what you're saying . . . ?
- Would you say more about that?

Establishing a sound basis for inference involves judging the credibility of sources of information and making and judging the credibility of observations. This may include examination of the following considerations:

- expertise
- conflict of interest
- agreement with other sources
- reputation
- the use of established procedures
- the ability to give reasons

Inference involves making and judging deductions, inductions, and value judgments and includes

- generalizing
- explaining the evidence, checking consistency with known facts, and eliminating alternative conclusions
- effectively investigating, designing experiments, including planning that controls variables, seeking evidence and counter-evidence, and seeking other possible conclusions
- examining the relevance of background facts
- identifying the consequences of a proposed action
- considering and weighing alternatives

> Among the critical skills required of the Canadian workforce is the ability to think critically and act logically to evaluate situations, solve problems, and make decisions.
>
> – The Conference Board of Canada

Creative Thinking

The processes of fluency, flexibility, originality, and elaboration are associated with the development of creative-thinking skills and strategies. These processes need to be incorporated in the development and implementation of programming options.

Fluency is the ability to generate many ideas. Bechtol and Sorenson (1993) define it as "thinking quickly and in quantity, generating a large number of ideas or possibilities, including relevant responses." Students learning this skill are required to tell what they know, to think of ideas for writing or speaking, and to think of ways to solve a problem. Question stems to promote fluency include the following:

- In what ways ... (e.g., In what ways might we solve the recess problem?)
- List ... (e.g., List different forms of power.)
- Brainstorm ... (e.g., Brainstorm possible consequences of a global economy.)

The principles of brainstorming are as follows:

- Accept all ideas.
- Defer judgment.
- Record all responses.
- Encourage the elaboration, extension, and modification of the ideas of peers.
- Encourage the generation of as many ideas as possible.
- Provide an open, secure classroom.

Fluency may also lead to "selective comparison" (Davidson and Sternberg 1984), where one is able to relate new information to what is already known and to combine seemingly unrelated ideas in unique ways. Such synthesis is one aspect of original thinking, which is discussed below.

Flexibility requires generating a wide range of ideas that are the result of an alternative way of viewing a familiar concept or process. The question stem How many different ways ... encourages student flexibility (e.g., How many different ways can you find to measure the length of a room? or List many different ways to produce a book review). Students categorize their ideas to examine how diverse their thinking actually is. If, for instance, in discussing the effects of unemployment, students focus only on economic effects, then they need to consider other areas such as emotional, social, and political effects.

Originality refers to unique or unusual responses. Original responses usually occur at the end of an idea-finding activity, after the more obvious ideas have been produced. Question stems include the following:

What is the most unusual idea/way ... ? (e.g., What is the most unusual way to market our product?)

What if ... ? (e.g., What if we had no air travel?)

Elaboration requires adding ideas, providing details, extending thinking, or bringing an abstract concept to life. What else ... ? is a question stem leading to inquiries like What else do you see? followed by a probe like, Tell me more. The students' own evaluation of their ideas is part of this process. It is through this evaluative process that students begin to consider the criteria that form the basis for their decision-making process.

When students use creative thinking skills and strategies to generate ideas, it is important to establish guidelines to keep the process moving and to create a safe environment for risk taking. One strategy that teachers might use to promote and enhance creative thinking is the SCAMPER technique (Eberle 1987). It helps students move from one idea to another. When students use this strategy, they are better able to make new connections or extend their ideas. Students think about a topic of concern and ask "To create a unique solution, what might I ... "

> **S**ubstitute? Who else? What else? What other place, routine, or practice?
> **C**ombine? Bring together/unite?
> **A**dapt? Adjust, to suit a condition or purpose?
> **M**odify? Alter, to change the form or quality?
> Magnify? Enlarge, to make greater in form, quality, or intensity?
> Minimize? Make smaller, lighter, slower, or less frequent?
> **P**ut to other uses? Find new ways to use?
> **E**liminate? Remove, omit, or get rid of a quality, part, or whole?
> What should be removed or simplified?
> **R**earrange? Change order or adjust? Create a different plan, layout, or scheme? Reverse? Place opposite or contrary? Turn it around, backwards, upside down, inside out?

(See Appendix 5-12: SCAMPER for more information on SCAMPER.)

Solving Problems

Many strategies and approaches can be used in problem solving. The creative problem-solving process is a strategy that can be used to examine real problems and issues. There are six stages to the model. Each stage requires a divergent phase (D), in which many ideas are needed, and a convergent stage (C), in which decisions are made about the best ideas to move forward.

The process, initially developed by Alex Parnes and Sidney Osborne in the 1950s, has been modified over the years so that it is more flexible. The following example is from *Creative Problem Solving: An Introduction* (Treffinger, Isaksen, and Dorval 1994) and illustrates the problem solving process. All of the stages do not need to be used with each problem. For example, when students are studying an environmental issue such as shrinking rainforests, gathering data and listing problems associated with the topic can be meaningful activities on their own. Later, students may choose one of the key problems to solve. While they may ultimately decide upon the best solution, they may or may not develop and implement a plan of action.

Creative Problem Solving Model

Divergent Phase	Convergent Stage
Understanding the Problem Component	
Mess Finding	
• seeking opportunities for problem solving	• establishing a broad, general goal for problem solving
Data Finding	
• examining many details and looking at the mess from many viewpoints	• determining the most important data to guide problem development
Problem Finding	
• considering many possible problem statements	• constructing or selecting a specific problem statement (stating the challenge)
Generating Ideas Component	
Idea Finding	
• producing many, varied, and unusual ideas	• identifying promising possibilities: alternatives or options with interesting potential
Planning for Action Component	
Solution Finding	
• developing criteria for analyzing and refining promising possibilities	• choosing criteria and applying them to select, strengthen, and support promising solutions
Acceptance Finding	
• considering possible sources of assistance/resistance and possible actions of implementation	• formulating a specific plan or action

Example:

If I were mayor ...

When a flyer announcing the "If I Were Mayor" contest arrived, grade 2 teacher Louis Baines saw it as an opportunity to use the idea as a problem solving exercise. She presented the following scenario to her students:

Mess finding: *You have just won the North Cowichan mayoral election. You are filled with pride that the people of this community chose you to be their mayor. You have great plans to improve the city.*

The class discussed the role of the mayor, what makes a good leader, and what pressing problems are facing their town. Each student had a different set of ideas. The following are excerpts from Ian's written responses. Note that first he lists all of his ideas and then selects the most important idea(s), marks it with an asterisk, and moves the most important idea forward.

Data finding: *Some things a mayor is concerned about are electricity, power lines, taxes, parks, population growth, and pollution.*

Problem finding: *In what ways might I lower the taxes, stop cutting down trees; stop pollution; stop littering; and protect the fish, beaches, and sea, and wildlife?*

Idea finding: *Ian decided that protecting the local habitat was the most important problem. His ideas were: 1. Instead of making the pollution go up into the air, make it go down into the centre of the Earth. 2. Do your part.*
3. Build a BIG wildlife preserve.

Solution finding: *Ian decided that one of the criteria necessary to assess his idea would be whether or not the issue is important to the citizens of his community. He evaluated his solution by looking at its advantages, disadvantages, and unique possibilities. Advantages were: animals can be seen and the Fish and Game Club would help. A limitation was that loggers and the government might not agree. A unique potential was that he could fence in the animals for people to see.*

Acceptance finding: *The first item on Ian's plan of action was to contact a realtor and buy lots of land. In one month he planned to hire a surveyor to map out the property. In three months he would contact volunteers to start working.*

Conducting Research

Questioning and Inquiry Skills

Critical thinking is an active process not only of constructing questions and of making connections from the known to the unknown but also of examining one's own thinking process. Questioning plays a key role in generating and developing ideas and in extending understanding. In *Practical Strategies For Critical Thinking,* Rehner (1994) states, "An effective learner is also an effective questioner." However, learning to question involves learning a variety of questioning strategies and being able to choose an appropriate strategy given a particular situation. In his work, Rehner (1994) suggests the following three specific strategies that help students to develop questioning skills:

1. Making broad questions more specific (learning to break down a broad question into its relevant and more specific parts)

Example: The broad question What does the story mean? can be broken down into questions such as What happens in the story? Who are the chief characters? What are the key events or turning points? Are there key details or descriptions that the author emphasizes? What are the key relationships and conflicts in the story? How does the story relate to the course I'm taking or to other stories I've read? (Rehner 1994, p. 101)

2. Generating questions when you fear you have none

When students are attempting to generate questions, Rehner (1994) suggests testing "several different types of sequence questions that are general enough to begin this process but precise enough to be answerable." For instance, examining an issue from the past, present, and future perspectives can be useful. Although students might know very little about the specific issue under investigation, questions might be generated concerning when the term or concept first began to be used, what its current meaning is, and how this meaning might influence future definitions. Such an evolutionary focus might yield information that can be used to generate more informed questions.

Another sequence suggested by Rehner (1994) is to encourage students to ask questions about the order in which the events happened. By organizing the material, philosophical and provocative questions such as Does reality determine imagination or does imagination determine reality? might emerge.

SUGGESTED READING

- *Research Comes Alive: Guidebook for Conducting Original Research with Middle and High School Students* (Schack and Starko 1998)
- *Looking for Data in All the Right Places: A Guidebook for Conducting Original Research with Young Investigators* (Starko and Schack 1992)

A third sequence of questions that Rehner suggests is to encourage students to examine a topic, usually a controversial one, using the following sequence of words: "must, which suggests urgency; should, which is philosophical; can't, which highlights what is impossible to do; and shouldn't, which points to what is undesirable or ill-advised, ... [in order to examine] it from within certain boundaries." (Barnes in Rehner 1994, p. 104)

Finally, questions that invite both positive and negative comparisons may be useful for students to ask. These questions can help students link their own lived experiences to the new information that they are trying to understand (e.g., How is a nation's debt like my own debt? and How is it not like my own debt? (Rehner 1994, p. 104)

3. Using a checklist of questions to minimize errors in thinking

Rehner (1994) suggests that the metacognitive approach of asking questions of oneself results in a self-awareness of one's thinking patterns and is useful in the evaluation of the ideas themselves. "Two very common errors in thinking," claims Rehner, "are overlooking a crucial variable or piece of information and assuming that any answers we have worked out must be right." To lessen the effects of these errors students can check their thinking periodically by asking themselves "Is there more to this problem, issue, or situation than I am currently seeing?" and "Have I fairly considered other views or tried to generate alternatives?" (Rehner 1994, p. 105)

An Inquiry-Based Model

An inquiry-based model of curriculum as described by Wells and Chang-Wells (1992) enables students to build upon their prior knowledge and experience by engaging in activities they see as meaningful. Because the model encourages the use of existing understanding and the pursuit of answers to students' authentic questions, it is responsive to the needs of individual students.

Wells and Chang-Wells (1992, p. 117) believe that "the construction of knowledge requires goal-directed engagement with new information, through direct experience and exposition, through discussion and deliberation with others, and through communing with self in writing and reading."

This inquiry-based model is organized by broad thematic units of study. It may start with a whole-class activity in which students brainstorm what they already know and what questions they might wish to investigate. Within each of these units, individual students or small groups then make decisions about the specific topics for investigation, based on their interests and on available resources.

Once the topics for study have been chosen, students are guided through three major stages of the inquiry process: researching and inquiring, composing and constructing, and presenting outcomes.

Through researching and inquiring, students collect information by reading, observing, experimenting, interviewing, and other fact-finding activities. The information gathered must then be assembled, organized, interpreted, evaluated, and understood before it can be presented to others. Although each of these stages may be done sequentially, they may also interact in a cyclical fashion as the students gain an understanding of the topic and work toward their presentation of what has been learned. Each of these stages of researching and inquiring, composing and constructing, and presenting outcomes involves the essential processes of goal setting, planning, doing, and reviewing. Reviewing may lead to revisions, which also involve goal setting, planning, and doing. As each stage also involves hypothesis testing and problem solving, students have an opportunity to use existing skills and to develop new ones.

This inquiry-based model gives students an opportunity not only for the development and practice of skills and processes but also for effective engagement. It is this engagement that motivates students to participate in these authentic investigations.

Interviewing

To support independent investigations students need to know where to obtain information, how to record ideas, and how to organize and report the outcomes of their work. In addition to researching using print materials and technology, interviewing and developing surveys should also be considered.

Prepare for the Interview

- Decide on the purpose of the interview and the type of information needed.
- Brainstorm possible questions and group together those that appear to be asking for the same information.

- Select the specific questions predicted to elicit the data needed for the research.
- Develop an order for presenting the questions.
- Decide how to analyze and evaluate the data.
- Brainstorm the steps in the procedure to gain and to arrange an interview.
- Select the important items and put them in a logical sequence.

Role-play the Interview

Interviewing can be high risk for students. If they are well prepared and have had opportunities to rehearse the interview in advance and get feedback from their classmates, they will feel more secure. Working in teams for face-to-face interviews—with one person asking questions and another recording answers—helps to relieve some of the pressure associated with this process.

Surveying

Surveying follows the same process as interviewing but with these differences:

- Write down the list of survey questions.
- Decide how to obtain responses. Yes or no responses? Multiple choice? Open-ended?
- Select the questions carefully.
- Field test the questions by trying them out on several volunteers.
- Rewrite the questions until they are clear and provide data that can be sorted and analyzed.

This section has included an overview of many options and strategies that are useful in working with gifted students. Some of these strategies are ones that have been used for years, and others may be new ideas. They do not all have to be used immediately. Choose the one or two that could be incorporated most successfully at first, and then gradually add others. Also, there may be professional development opportunities offered within your school board that would assist in increasing your knowledge of giftedness and programming strategies.

Section 5 Appendices

5-1: Exit Cards 135
5-2: Sample 3–2–1 Card 137
5-3: The Frayer Model 138
5-4: Content Complexity 141
5-5: Tiered Assignments 143
5-6: Anchor Activity 144
5-7: Historical Novel Anchor Activity 146
5-8: Anchor Activity Example 148
5-9: RAFT – Role, Audience, Format, Topic 151
5-10: *The Crucible* RAFT English Language Arts Assignment 153
5-11: Persons «vert» 155
5-12: SCAMPER 158
5-13: Think Tic Tac Toe 159
5-14: Cubing 162
5-15: Learning Contracts 166
5-16: Curriculum Compacting Planning Sheet (Compactor) 168
5-17: Sample Questions 170
5-18: Independent Study for Credit: Interim Guidelines and Policy 174
5-19: Challenge for Credit 184
5-20: Creative and Critical Thinking 187
5-21: Critical and Creative Thinking for Gifted Students Through FPSPI 189

Appendix 5-1

Exit Cards

Source: Used by permission from Tomlinson 2001.

What are they?

Exit cards are used as a quick assessment tool to help teachers become more aware of student understanding of the concepts being taught. Exit cards are written student responses to questions posed at the end of a class or learning activity or at the end of a day. They may be used at any grade level and in any subject area.

How long do exit cards take to complete?

Exit cards take about five minutes to complete and reveal important information about student understanding.

When should exit cards be used?

Exit cards may be used as part of ongoing assessment and may be used in daily routines or lessons as a closure activity.

How do I choose appropriate questions?

The questions chosen by the teacher depend on what information or type of response is expected from the students. The questions can be varied and target skill development through demonstrations, explanations, understanding, or a reflection of how the students feel about their learning success or frustration. Opinions are often requested in exit cards, to address personal feelings or perceptions. The questions should be short and only take a few minutes to write (and read) so they become a quick assessment check.

How do I use exit cards?

Distribute a slip of paper or index card to each student. Students put their name on the card and wait for the teacher to pose the question(s). Students respond to the question(s) and turn in the card before they leave the classroom. The cards can be used as a pass or ticket out of the classroom.

What student expectations should be set?

Students need to know the purpose of the exit cards. Let them know that you want to know how well they understand what is being taught or any difficulties they may be having so you can plan to help them. There are no wrong answers, but effort is expected.

How will exit-card information be used?

Teachers assess the responses on the exit cards in order to provide differentiated instruction to meet the diverse needs of students in the classroom. Responses will assist the teacher in forming groups for appropriate work the following day or for helping to determine prior knowledge that some students brought to the class or simply clarifying problem areas that are blocking some students.

Sample exit card:

Exit Card: Decimals and Fractions

Name: ______________________________

- How is a decimal like a fraction?
- How is it different?
- What was a light–bulb moment for you as you thought about decimals?

Appendix 5-2

Sample 3–2–1 Card:

Source: Used by permission from Tomlinson 2001.

Name: ______________________________

- 3 things I learned from the friction lab ...
- 2 questions I still have about friction ...
- 1 way that I see friction working in the world around me ...

Appendix 5-3

The Frayer Model

What is it?

The Frayer Model is a word-categorization activity that helps students develop an understanding of concepts. Two versions of the Frayer Model can be used. In the first, students provide a definition, list characteristics, and provide examples and non-examples of the concept. In the second, students analyze a word's essential and non-essential characteristics and refine their understanding by choosing examples and non-examples of the concept.

How can it be used in instruction?

There are many concepts that can be confusing because of their close relationships. The Frayer Model provides students with the opportunity to understand what a concept is and what it is not. It gives students an opportunity to explain their understanding and to elaborate by providing examples and non-examples from their own lives.

How to use it:

1. Assign a concept that might be confusing because of its relational qualities.
2. Explain the Frayer Model diagram.
3. Model how to fill in the diagram.
4. Provide students with time to practise with the assigned terms.
5. Once the diagram has been completed, let students share their work with other students.
6. Display students' diagrams as posters throughout the unit so students can refer to the words and continue to add ideas.

Frayer Model Examples

Social Studies

Definition (in own words)

The ideas, beliefs, and ways of doing things that a group of people who live in an area share

Characteristics

- Shared ideas
- Shared beliefs
- Shared practices

CULTURE

Examples (from own life)

- What my friends and I wear
- What we listen to

Non-examples

- Colour of my hair
- Colour of my eyes
- Nature
- Weather

Science

Definition (in own words)

A change in the size, shape, or state of matter

Characteristics

- New materials are NOT formed
- Same matter present before and after change

PHYSICAL CHANGE

Examples (from own life)

- Ice melting
- Breaking a glass
- Cutting hair

Non-examples

- Burning wood
- Mixing baking soda with vinegar

Mathematics

Definition (in own words)

A whole number with exactly two divisors (factors)

Characteristics

- 2 is the only even prime number
- 0 and 1 are not prime
- Every whole number can be written as a product of primes e.g.: $24 = 2 \times 2 \times 2 \times 3$

PRIME

Examples (from own life)

2, 3, 5, 7, 11, 13

Non-examples

- 9 is not a factor of 12
- 0 is not a factor of any whole number

Appendix 5-4

Content Complexity

Source: The Curriculum Project, 12400 Hwy 71W., Suite 350-414, Austin, TX 78738, 800-867-9067.

Copyright © 1992, by J. Curry and J. Samara.

Content Strategy #3: Themes

Themes may be used to increase the complexity of content within an area of study. When used with a specific discipline, the use of a theme will allow students to examine the interrelationships between and among facts, details, rules, and concepts. When used across disciplines, a theme will allow students to study the inter-relatedness of areas of study.

Selected Themes

1. Change
2. Community
3. Conflict
4. Exploration
5. Force
6. Order
7. Patterns
8. Power
9. Structure
10. Systems

For a theme to be effective, it is essential to select generalizations (or "big ideas") that can be verified and/or disputed in the course of study. The table on the following page includes possible generalizations for each theme.

1. **Change**

- change generates additional change
- change can be either "good" or "bad"
- change is inevitable
- change is necessary for growth

2. **Community**

- a community has members
- community members share a common environment
- communities follow patterns of growth and change
- when one community comes in contact with another community, change may occur

3. **Conflict**

- conflict is composed of opposing forces
- conflict may be natural or human-made
- conflict may be intentional or unintentional
- conflict may allow for synthesis and change

4. **Exploration**

- exploration requires taking risks
- exploration confronts "the unknown"
- exploration may result in "new findings" or the confirmation of "old findings"
- exploration requires leadership (i.e., explorers)

5. **Force**

- force attracts, holds, or repels
- force influences or changes
- force and inertia are co-dependent
- force may be countered with an equal or greater force

6. **Order**

- order may be natural or constructed
- order may allow for prediction
- order may communicate concepts
- order may have repeated patterns

7. **Patterns**

- patterns have segments that are repeated
- patterns allow for prediction
- patterns have an internal order
- patterns may have symmetry

8. **Power**

- power is the ability to influence
- power may be used or abused
- power is always present in some form
- power may take many forms (chemical, electrical, political, mechanical)

9. **Structure**

- structures have parts that interrelate
- parts of structures support and are supported by other parts
- smaller structures may be combined to form larger structures
- a structure is no stronger than its weakest component part

10. **Systems**

- systems work to complete a task or a mission
- systems are composed of sub-systems and parts
- parts of systems are interdependent upon one another and form symbiotic relationships
- a structure is no stronger than its weakest component part

The Curriculum Project • 12400 Hwy 71W. • Suite 350-414 • Austin, TX 78738 • 800.867.9067
Copyright © 1992, by J. Curry and J. Samara

Appendix 5-5

Tiered Assignments

Strategy	Description of Strategy	Rationale For Use	Guidelines For Use
Tiered assignments	In a heterogeneous classroom a teacher uses varied levels of activities to ensure that students explore ideas at a level that builds on their prior knowledge and prompts continued growth. Student groups use varied approaches to the exploration of essential ideas.	• Blends assessment and instruction • Allows students to begin learning from where they are • Allows students to work with appropriately challenging tasks • Allows for reinforcement or extension of concepts and principles, based on student readiness • Allows modification of working conditions, based on learning style	• Be sure the task is focused on a key concept or generalization essential to the study. • Use a variety of resource materials at differing levels of complexity and associated with different learning modes. • Adjust the task by complexity, abstractness, the number of steps, concreteness, and independence to ensure appropriate challenge. • Be certain there are clear criteria for quality and success.

A Tiered Lesson

- What range of learning needs are you likely to address?
- What should students know, understand, and be able to do as a result of the lesson?
- What's your "starting-point lesson"? How will you hook the students?
- What's your first cloned version of this activity?
- What's your second cloned version of this activity?
- What's your third cloned version of this activity?

Appendix 5-6

Anchor Activity

Source: Used by permission from Montgomery County Public Schools 2010.

Anchoring is a strategy that allows students to work on an ongoing assignment directly related to the curriculum that can be completed independently throughout a unit or a semester. An anchor activity is a logical extension of learning during a unit, an elaboration of important goals and outcomes that are tied to the curriculum, and tasks for which students are held accountable.

The purpose of an anchor activity is to provide meaningful work for students when they are not actively engaged in classroom activities (e.g., when they finish early, are waiting for further directions, are stumped, or first enter class or when the teacher is working with other students).

Benefits of an Anchor Activity

- An anchor activity can be used to differentiate activities on the basis of student readiness, interests, or learning profile.
- Anchor activities allow students time to work on independent research, to work more in depth with a concept, and to enrich their skill development.
- Anchor activities can be used as a management strategy when working with small groups of students.
- Students can work on the anchor activity alone, with a partner, or in a small group.
- Anchor activities can be a vehicle for making the classroom more student-centred.

Possible Anchor Activities

- creating a bulletin board on a current topic
- math practice packets
- learning centres
- math puzzles/games
- research projects
- writing a skit or talk show about a current topic
- journal entries

- activity box
- silent reading
- creating a word puzzle about a current topic
- learning logs
- magazine articles

Anchor activities work best when

- teacher expectations are clear
- the tasks are related to students' interests and abilities
- the tasks are tied to the curriculum

Anchor Activities Can Be Used to Create Groups

Assigning anchor activities allows the teacher to manage time constructively and to teach the students to work independently and quietly. If the teacher wishes to divide the class into groups, half the class could work on the anchor activity while the rest of the class has a different project that requires smaller group activities; then the students could switch. Also, the class could be divided into three groups, with one group working on the anchor activity, one group doing a different activity, and the third group working directly with the teacher. These groups also rotate. In this way the teacher has time for smaller group instruction or the ability to circulate around the class for more individual assistance.

Appendix 5-7

Historical Novel Anchor Activity

Based on the novels *Evangeline and the Acadians* by Robert Tallant and *The Dream Carvers* by Joan Clark.

This could be a cross-curricular study for language arts and social studies. It is based on the universal themes of conflict and relationships.

Pre-reading: Because of the content of the novels, it would be very helpful to support student understanding in the following ways:

> **Social studies:** Teach the geography of Nova Scotia, Newfoundland, Greenland, and surrounding areas. Ensure that the students have a knowledge of the history of settlement of Atlantic Canada and the conflict between the French and the English. Discuss the relationship that eventually developed. Look at the story of the First Nations people such as the Mi'kmaq and the Beothuk.
>
> **Language arts:** Familiarize the students with Henry Wadsworth Longfellow's poem *Evangeline* and the story behind it. Read short stories related to the themes of conflict and relationships and reflect on these in relation to real-world situations. A look at Norse mythology and Glooscap would provide an excellent background to the novels.

Student Activities:

Read one of the historical novels and complete the assigned work.

Evangeline and the Acadians

1. Build a word bank of new vocabulary that you find as you read the novel. Read the meaning of each word as it relates to the novel.
2. Create two story maps. The first one should lead up to and include the Expulsion of the Acadians. The second should include the rest of the story about how the Acadians overcame their problems and re-established themselves and their culture.
3. Explain the circumstances of the Acadians and their expulsion around the quote "In the right place at the wrong time."

4. Choose either the theme of conflict or relationships. Create a character for your novel, who has a particular point of view, and complete **one** of the following activities:
   - Write a journal telling what you are feeling during the periods before, during, and after the expulsion.
   - Create a chart listing the advantages and disadvantages of being an Acadian in Nova Scotia at the time of the novel.
   - Find a collection of songs and poems related to Acadian life. Write one of your own **or** analyze a common theme found in your collection.
   - Draw a map showing the various routes of the Acadians after the expulsion, as detailed in the novel.

The Dream Carvers

1. Despite the fact that Thrand cannot speak the language of his captors, how does the author clearly show that he was afraid?
2. Complete a Venn diagram showing how Wobee solved his conflicts and built relationships.
3. If you were Wobee and you had a choice to stay with the Beothuk or return home, which would you pick? Clearly explain why.
4. Choose one of the following:
   - Develop a timeline showing the adaptations that Thrand made from the time of his capture until his final decision.
   - Twice in the novel the attempt to steal seal meat led to conflict. Write a fable around the theme "History repeats itself."
   - The Beothuk were physically fit and able to use their bodies well. Perform a play recreating scenes that show the kinesthetic ability of these people.
   - Create a drawing, painting, collage, or cartoon strip to clearly depict either the theme of conflict or relationships.

As a follow-up activity the teacher could lead a class discussion in which the content of each novel is shared and the students discuss identity as sought by Thrand and the Acadian people.

Appendix 5-8

Anchor Activity Example

Source: Used by permission from Roberts-Regan 2009.

Science 10 Weather Magazine Anchor Project

As we learn about the science of weather over the next several weeks in class, you will work with two or three other students in a group to develop a weather magazine that will fulfill the requirements given below. You will work on this project for the first 20 minutes of class each day.

Your magazine must fulfill the following requirements:

- ___________ pages
- hard copy or _______________ (at the discretion of the teacher)
- title
- cover (back and front)
- table of contents
- letters to the editor
- the science of weather
- local weather
- a weird weather event
- a severe weather event
- weather around the world
- related activity pages
- free pages with weather connections (Use your imagination!)
- advertisements
- classified ads
- illustrations
- references

Due dates:
Organizational planning ______________________
Layout planning ______________________
Final magazine ______________________

Your final mark for the magazine will be obtained from input from your teacher, yourselves, and your peers, using predetermined criteria.

Weather Magazine Planning Page

A copy of this organizational sheet is to be submitted to your teacher. Your copy of this form needs to be submitted with your magazine and your self-evaluation forms when the final magazine is submitted.

Responsibilities

All group members must assume the responsibilities of:

- editor(s)
- researcher(s)
- writer(s)

Remaining responsibilities can be determined by the group and/or the teacher.

- art director(s)
- illustrator(s)
- photo researcher(s)
- advertising
- activity page editor(s)
- ______________________
- ______________________
- ______________________

Name of Group Member	Responsibility

Magazine Layout Planning

Page ____	**Page ____**	**Page ____**

Page ____	**Page ____**	**Page ____**

Appendix 5-9

RAFT – Role, Audience, Format, Topic

RAFT is a strategy that motivates and encourages creative writing as well as divergent thinking in students. It works in this way:

1. Select content from any subject area that students need to process, review, and/or understand.
2. Consider the possible roles that students might take in writing about a topic as well as what the topic might be.
3. Offer students the opportunity to assume one of the roles and write the assignment on the topic suggested. Students may also be allowed to create their own RAFT scenarios.
   (Gregory and Kuzmich 2005)

RAFT Activity Template

RAFT			
Role	**Audience**	**Format**	**Topic**

Appendix 5-10

The Crucible RAFT English Language Arts Assignment

Source: Reprinted by permission from Glen Aucoin, Halifax Regional School Board, 2006.

A RAFT (role, audience, format, topic) assignment can be used to synthesize the unit's exploration of characterization and allows students to "step into the skin" of one of the characters from the play to get a look at that character from his or her perspective.

Know:

Voice, tone, and style

Understand:

- Each character has a personal style.
- Individuals have their own unique perspectives, determined by their experiences and relationships.
- Personal style reflects the individual's culture, time, personal experiences, etc.
- In order to get a true understanding of a person or event, multiple perspectives must be considered.

Be Able To:

- Describe a character's voice and style.
- Mimic a character's voice and style.
- Create a piece of writing that reflects the character's voice and style.
- Discuss factors contributing to the character's voice and personal style.

See sample RAFT on page 154.

Role	Audience	Format	Topic
John Proctor	Hawthorne, Danforth, Hale, Parris, and Elizabeth Proctor	Speech	"It is my name!" (Act Four perspective)
Tituba	Her family	Letter	"They are blaming me for something I didn't do."
Reverend John Hale	His superiors	Letter	My findings and recommendations (After the play's conclusion)
Abigail Williams	Self	Monologue (soliloquy)	"He does love me, and this is all worth it." (Act Four perspective)
Mary Warren	Self	Diary	"We made it all up." (Act Three perspective)
Elizabeth Proctor	John Proctor	Letter	"I feel as though I let you down, John." (Act Four perspective)
Reverend Samuel Parris	Town meeting	Speech	"Do we really have a witch problem?" (Act One perspective)
Deputy Governor Danforth	Court records	Summary	Final reflection on the trial (After the play's conclusion)

Appendix 5-11

This appendix is in French and intended for French Second Language teachers.

Source: Reprinted by permission from Tara Cormier, Halifax Regional School Board 2006.

Pensons «vert»

Français 12ᵉ année

Choisissez deux rôles, auditoires, formats et sujets du tableau suivant. Vous êtes permis de travailler avec un(e) partenaire ou individuellement pour présenter deux de ces sujets. Soyez créatifs! La présentation durerait entre trois et cinq minutes. Il faut soumettre une copie écrite de votre travail.

Les résultats d'apprentissage:

L' élève sera capable…

- d'interagir dans la salle de classe où le français est la langue d'usage
- d'exprimer des opinions, des points de vue et de les justifier
- de s'engager dans une variété d'activités interactives
- de traiter de l'information pour répondre à ses besoins
- de narrer des événements vécus
- d'interpréter et de réagir à des textes de façon critique et créative
- de produire une variété de textes en suivant la structure appropriée
- de se servir de stratégies d'apprentissage, de stratégies de communication et des stratégies sociales pour communiquer en français à l'oral et à l'écrit
- de comprendre et d'utiliser le vocabulaire, les expressions et les structures reliées aux besoins de la salle de classe et aux domaines d'expérience selon la situation de communication

Rôle	Auditoire	Format	Sujet
Un animal en voie de disparition	Les êtres humains	Chanson	Il faut me protéger!
Un scientifique	Les politiciens	Report/Présentation	Les problèmes écologiques
Un enfant	Les adultes	Vidéo ou cassette	Mes espoirs pour l'avenir
Un médecin	Les étudiants de l'université	Présentation powerPoint	La médecine de l'avenir
Un animal	Une compagnie de maquillage	Lettre	Les animaux de laboratoire
Une plante	Une compagnie pharmaceutique	Dépliant	Des <<3 R>> réduire, réutiliser, recycler
Un adolescent	Les parents	Poster	La conservation de l'énergie
Un insecte	L'organisation <<Greenpeace>>	Article de journal	Encouragez les gens à protéger l'environnement
Un rat	Les enfants	Questionnaire/sondage	La génie génétique
Un vendeur de <<SmartCars>>	Le média	Entrevue	L'électronique dans la vie
Un vendeur de <<Hummer>>	Le président de <<Exxon>>	Jeux de rôles	La couche d'ozone
Un citoyen canadien	Stephen Harper, le premier ministre du Canada	Livre d'enfant	La science-fiction
Votre choix	Votre choix	Votre choix	Votre choix

Évaluation

Date de la présentation: ______________________________

Critères	Niveau 1	Niveau 2	Niveau 3	Niveau 4
Qualité des idées	Il y a un manque d'informations	Inclus quelques informations	Inclus beaucoup d'informations requises	Inclus tous les informations requises
Organisation	Il y a un manque d'organisation et clarté	Assez organisé et claire	Organisé et claire	Très organisé et attirant
Conventions linguistiques	Il y a des erreurs de grammaire dans presque toutes les phrases	Il y a des erreurs de grammaire dans plusieurs phrases	Il y a des erreurs de grammaire dans quelques phrases	Il n'y a pas plus d'une ou deux erreurs de grammaire
Créativité/Style de la présentation	La présentation n'était pas enthousiaste	La présentation était asses enthousiaste mais il y avait des moments plats	La présentation était enthousiaste et intéressante	La présentation était très enthousiaste et intéressante.
Vocabulaire	Très limité Ne peut pas exprimer ses idées	Assez limité mais peut exprimer quelques idées.	Assez varié pour exprimer ses idées	Peut exprimer de nombreuses idées dans un vocabulaire très varié
Orthographe	Il y a beaucoup d'erreurs d'orthographe	Il y a plusieurs erreurs d'orthographe	Il y a quelques erreurs d'orthographe	Il n'y a pas plus d'une ou deux erreurs d'orthographe.

Appendix 5-12

SCAMPER

SCAMPER is a strategy you can use to assist with brainstorming ideas or developing creative-thinking skills. Here is an explanation of what the acronym stands for and how it has been used in a practical way:

Substitute something for it. Let's think about the original telephone. It became a cell phone.

Combine: What could you combine with the object to make something more useful? Create it so that it vibrates quietly to alert the person of a call.

Alter or **Adapt** an aspect: Change or add something to your object to make something new. For example, add call display so that you can see the caller's name.

Magnify or **Minify** an aspect: How could you make it larger or smaller? Make it small enough to fit into a purse or shirt pocket.

Put some part of it to another use. Add a camera to take pictures or video.

Eliminate some part of it. Develop it so that it is wireless and can be used almost everywhere.

Reverse or **Replace** some part of it. Replace the number pad with a full keyboard that allows the cell phone to be used as a computer or a PDA.

SCAMPER is used in industry (as you can see by the above example) to create new products and develop new ideas. It is an engaging and fun way to involve your students. Try the SCAMPER technique on the following:

- a fairy tale
- an event in history
- an animal
- an inanimate object

Appendix 5-13

Think Tac Toe

Think Tac Toe is a take on the game tic-tac-toe. It offers students activity choices in the form of a 3 x 3 or 4 x 4 grid.

Within each cell of the grid there is an activity. Students select either a vertical, horizontal or diagonal line and complete each of the activities in the line they selected.

It is important that the activity choices are linked to the area of study or to specific outcomes. The choices encapsulate differentiation and can include considerations for learning styles, interests, and/or higher levels of Bloom's taxonomy, and should target different types of intelligences.

The following pages present examples of Think Tac Toe Boards.

Grade 1

"Butterfly" Think Tac Toe

1. Art Smart **Make** Make a tissue-paper butterfly using stickers, tissue paper, and pipe cleaners.	**2. Me Smart** **Pretend** Pretend that you are the larva. **Write** Write about changing from larva to a butterfly.	**3. People Smart** **Learn** **Read** about butterflies, and **talk** to your friends about what they know. **Tell** the class what you have learned.
4. Math Smart **Create** Create a diagram that shows the life cycle of the butterfly.	**5. Read** two books about butterflies. In your butterfly journal, **record** two things that you found out about butterflies.	**6. Body Smart** **Act Out** Act out the change from a larva to a butterfly.
7. Nature Smart **Compare** Compare the needs of a butterfly to your needs. Compare the needs of a larva to the needs of a butterfly.	**8. Word Smart** **Complete** Complete a crossword puzzle on butterflies.	**9. Music Smart** **Compose** Create a song about butterflies and play it for the class.

I choose activities #________, #_______, and #_______.

I will complete #5.

Name: ____________________________ **Date:** ________________

Grade 7

"Novel" Think Tac Toe

1. Art Smart Illustrate your favourite part of the story. Create a picture that allows the viewer to understand the story. Include lots of details. OR Create a storyboard for your favourite part of the story. Create six cells that could be used to make a movie.	**2. Me Smart** Choose a character from the story. Imagine that you are the character. Write a letter from the character to a grade 7 student, explaining his or her situation, feelings, and emotions.	**3. People Smart** Choose a main character from your story. Do a character study: What does the person look like, say, think, and feel? How does he or she react to other people? How do other people react to him or her? What do you think about him or her? Present your character study to the class. Provide examples to support your responses.
4. Math Smart Choose a main character from the story and create his or her timeline. Show how the events in the story impact his or her life from the beginning to the end of the story. This can be done in a written or graphic form or a combination of both.	**5. Select a novel to read. Summarize the story. Be certain to include the main characters, the problem, and how it was solved. Where else have you experienced a similar story (e.g., yourself, another story, a film, talking to friends)?**	**6. Body Smart** Choose your favourite part of the story. Working with others or on your own, create a five-minute play bringing this part to life.
7. Nature Smart Where does your story take place? Create a picture that shows the environment. Include lots of detail. Choose a place where you feel the same emotion in your own environment. Write about it or draw it.	**8. Word Smart** Find 10 words that you do not understand. Create your own dictionary and present these words to the class by putting the words into sentences that you have created.	**9. Music Smart** Choose a theme from the story and create a rap, song, or poem.

I choose activities #_______, #_______, and #_______.

I will complete #5.

Name: ________________________ **Date:** _______________

Source: Created by Liz Punshon, Halifax Regional School Board, 2004.

Appendix 5-14

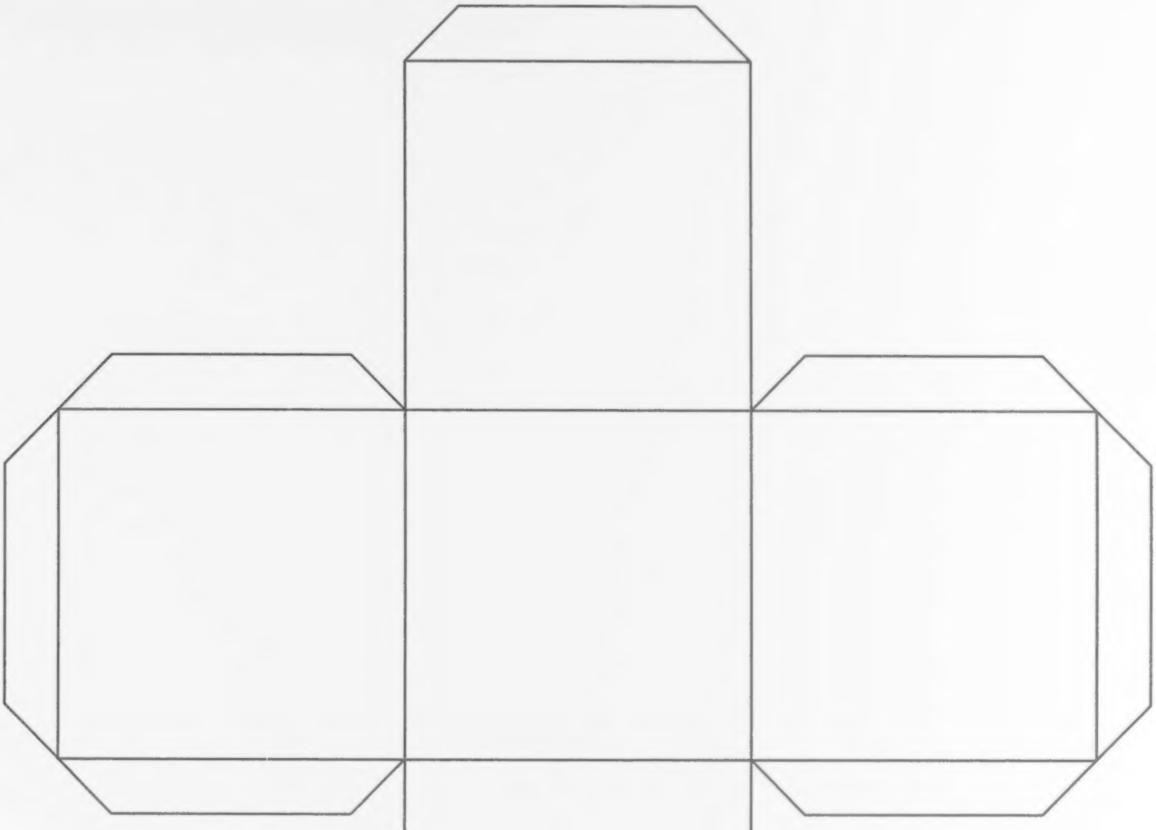
Cubing

Cubing is an instructional strategy that teachers can use to differentiate activities for students based on readiness, learning style, and/or interests.

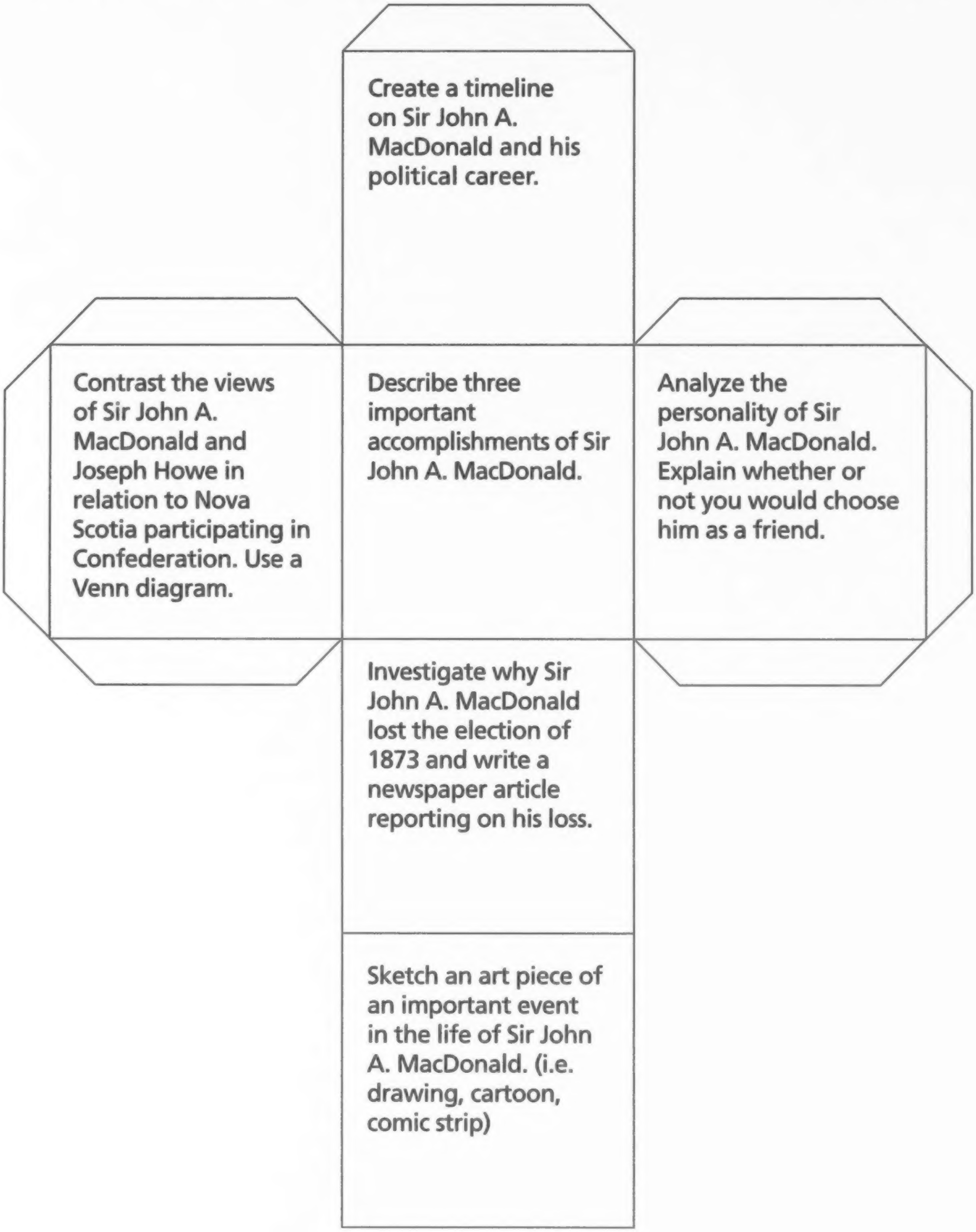
The teacher creates a cube to address the needs of different groups of students. Each side of the cube has a different activity related to the subject and/or concept being learned. Students roll the cube and work on the activity that comes up.

The following pages include a template and a sample of a cubing activity.

Template for the Cubing Activity



Example of two complementary cubes created at different levels of difficulty:



Create a timeline on Sir John A. MacDonald and his political career.

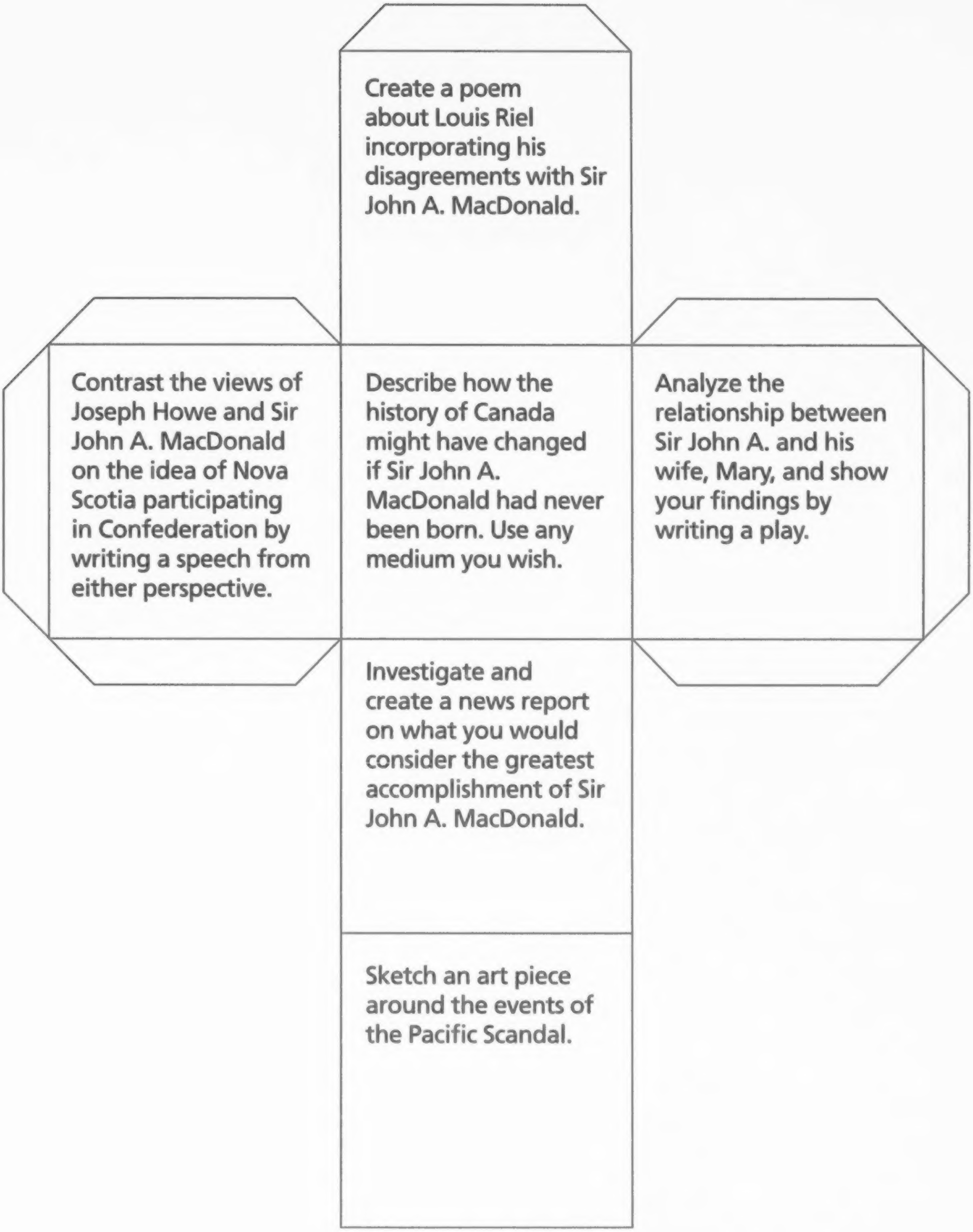
Contrast the views of Sir John A. MacDonald and Joseph Howe in relation to Nova Scotia participating in Confederation. Use a Venn diagram.

Describe three important accomplishments of Sir John A. MacDonald.

Analyze the personality of Sir John A. MacDonald. Explain whether or not you would choose him as a friend.

Investigate why Sir John A. MacDonald lost the election of 1873 and write a newspaper article reporting on his loss.

Sketch an art piece of an important event in the life of Sir John A. MacDonald. (i.e. drawing, cartoon, comic strip)



Create a poem about Louis Riel incorporating his disagreements with Sir John A. MacDonald.

Contrast the views of Joseph Howe and Sir John A. MacDonald on the idea of Nova Scotia participating in Confederation by writing a speech from either perspective.

Describe how the history of Canada might have changed if Sir John A. MacDonald had never been born. Use any medium you wish.

Analyze the relationship between Sir John A. and his wife, Mary, and show your findings by writing a play.

Investigate and create a news report on what you would consider the greatest accomplishment of Sir John A. MacDonald.

Sketch an art piece around the events of the Pacific Scandal.

Appendix 5-15

Learning Contracts

Source: Reprinted by permission from Saskatoon Public Schools 2010.

What are learning contracts?

Learning contracts provide a method of individualizing instruction and developing student responsibility. They permit individual pacing so that students may learn at the rate at which they are able to master the material. Learning contracts can be designed so that students function at the academic levels most suitable to them and work with resource materials containing concepts and knowledge that are appropriate to their abilities and experiences. Although this method focuses on the individual, learning contracts also provide an opportunity for students to work in small groups. The teacher may select this approach for some students to support them as they learn to work independently.

When a student is first beginning to use learning contracts, the teacher provides learning objectives, identifies a choice of resources, and sets some basic time parameters for the project. As students become more experienced with learning contracts, the teacher may choose to involve them in setting the learning objectives. Learning contracts usually require that students demonstrate the new learning in a meaningful way, but students are allowed choice in the selection of a method or activity.

Learning contracts can be highly motivating for students. As they become skilful in making appropriate choices and begin to assume more responsibility for their own learning, they become increasingly independent, learn to use resources to their advantage, and take pride in their ability to teach themselves and share their new learning with others.

What is the theory behind learning contracts?

Learning contracts are both a teaching strategy and an assessment tool used to encourage self-directed learning. They are a negotiation between the student and teacher, and, in some cases, parents/guardians, that helps define what each party's responsibilities are. Learning contracts allow for shared responsibility of the planning and learning experiences. This allows for the students to actively participate in the learning process from start to finish. Students begin to feel the need to learn because the learning objectives become their own personal goals. In turn, students begin to take responsibility and control over their own learning. In this way learning contracts are an effective teaching strategy in helping students become intrinsically motivated and responsible for their own learning.

Learning contracts provide flexibility for teachers to meet the individual needs of students. They allow students to work at different levels according to their own knowledge. Students are not forced to do unnecessary tasks but rather negotiate their work on what they need to learn. This, in turn, provides them with motivation to reach a goal instead of feeling that they are doing needless work or learning things that they already know.

This appendix has been reproduced with the permission of Saskatoon Public Schools, 2010. Further reproduction is prohibited. The online version of this information is located at http://olc.spsd.sk.ca/DE/PD/instr/strats/learningcontracts/index.html and http://www.centralischool.ca/~bestpractice/contract/theorycontract.html.

Appendix 5-16

Curriculum Compacting Planning Sheet (Compactor)

Name: ____________________

Subject: ____________________

Date: ____________________

Name it	**Prove it**	**Change it**
List the specific curriculum outcomes to be considered for compacting.	List the activities or procedures to show mastery of these outcomes.	List the alternative enrichment or acceleration activities to be used to replace the regular curriculum.

Source: Adapted from *Curriculum Compacting: The Complete Guide to Modifying the Regular Curriculum for High Ability Students* (Reis, Burns, and Renzulli 1992).

Curriculum Compacting

The compactor is a tool to be used for the process of curriculum compacting.

- The first column should include information on learning outcomes and student strengths in those areas. Teachers should list the outcomes for a particular unit of study, followed by data on the students' proficiency in completing these outcomes.
- In the second column teachers should detail the pretest vehicles they select, along with test results. The pretest instruments can be formal measures, such as pencil and paper tests, or informal measures, such as performance assessments based on observations of class participation and written assignments. Specificity is extremely important. Recording an overall score of 85% on 10 outcomes, for example, sheds little light on what portion of the material can be compacted, since students might show limited mastery of some outcomes and high levels of mastery of others.
- Column three is used to record information about enrichment options. In determining these options, teachers must be fully aware of students' individual interests and learning styles. Two instruments may be used to help make decisions about replacement activities that place major emphasis on student preferences. The *Interest-A-Lyzer* and the *Learning Styles Inventory* (Renzulli and Smith 1979) provide profiles of general categories of student interests, and the types of learning activities that students would like to use in pursuing these interests.

For an in-depth explanation of the curriculum compacting process, go to the University of Connecticut website (www.gifted.uconn.edu/sem/semart08.html).

Appendix 5-17

Source: Reproduced by permission from Alberta Education (Alberta Learning 2002, GT.133–137.)

Sample Questions

Type	Goal	Key Strategies	Examples
Quantity questions Questions that elicit "listening" responses	To balance reproductive and productive responses	Brainstorming	*Reproductive question* List the capital cities of Canada's 10 provinces. *Productive question* Choose a new capital city for each of any five provinces and provide reasons to support each choice.
Compare/contrast questions Questions that direct attention to similarities and differences	To stimulate high-level thinking	Using forced associations	How is friendship like a peanut butter sandwich? How is a peach different from a watermelon?
Feelings/opinions/ personification questions Questions that invite students to respond from a personal perspective	To motivate students to value their opinions	Partnering: bringing the teacher and student together on an emotional level	Would you rather watch a video or read a novel? Give reasons for your choice.
Divergent questions Questions that prompt a reorganization of reality	To foster creative thinking	Brainstorming in small groups and with partners	What would happen if Wayne Gretzky became your teacher for a day? In what ways might you use a brick?
Open-ended questions Questions that require more than one answer or that cannot be answered with a simple "yes" or "no" response	To encourage the consideration of many possible answers	Synthesizing, analyzing, and evaluating	What are some things that happen when computers replace employees? How might Quebec be encouraged to remain in Canada?

Higher-Order Thinking: Questioning and Beyond Bloom's Taxonomy

Bloom's Taxonomy model describes six levels of thinking, arranged in a sequential manner: knowledge, comprehension, application, analysis, synthesis, and evaluation. Susan Winebrenner (2001) has altered the original sequence. She places evaluation before synthesis because she believes that students need to evaluate their opinions after analysis. This arrangement implies that the two lower levels (knowledge and comprehension) require more literal and less complex thinking than the upper or higher levels (analysis, evaluation, and synthesis). Application is somewhat of a "swing" category, depending on the complexity of the task.

- **Knowledge** is simply recall. Students can say they know something if they can recall it to recite it or write it down.
- **Comprehension** means students can say what they know in their own words. Retelling a story, stating the main idea, or translating from another language are several ways in which students can demonstrate that they comprehend or understand what they have learned.
- **Application** means that students can apply what they have learned from one concept to another. For example, they might use their knowledge of fractions to double a baking recipe or may be required to decide when to use certain math formulas.
- **Analysis** means that students can understand the attributes of something so that its component parts may be studied separately and in relation to one another. Asking students to compare and contrast, categorize, and/or recognize inferences, opinions, or motives provides experience in analysis.
- **Evaluation** gives students opportunities to judge what they have analyzed. For this reason, the model that follows considers evaluation before analysis, since it is natural to ask students to give their opinions or state preferences about something they are analyzing.
- **Synthesis** is the most complex and difficult level of thinking. It requires students to create a thought, idea, or product that is novel or original. All of the creative thinking activities give students experience with synthesis. Going further, when students can take bits and pieces of several theories or combine ideas from different sources to create an original perspective, they are engaging in synthesis.

Taxonomy of Higher Order Thinking

Category	Definition	Trigger Words	Products
Synthesis	Reform individual parts to make a new whole.	compose, design, invent, create, hypothesize, construct, forecast, rearrange parts, imagine	lesson plan, song, poem, story, ad, invention
Evaluation	Judge the value of something vis-à-vis criteria. Support a judgment.	judge, evaluate, give an opinion or viewpoint, prioritize, recommend, critique	decision, rating/grade, editorial, debate, critique, defence/verdict
Analysis	Understand how the parts relate to a whole. Understand the structure and motive. Note fallacies.	investigate, classify, categorize, compare, contrast, solve	survey, questionnaire, plan, solution, report, prospectus
Application	Transfer the knowledge learned in one situation to another.	demonstrate; use guides, maps, charts, etc.; build; cook	recipe, model, artwork, demonstration, crafts
Comprehension	Demonstrate a basic understanding of the concepts and curriculum. Translate to other words.	restate, give examples, explain, summarize, translate, show symbols, edit	drawing, diagram, response to a question, revision
Knowledge	Ability to remember something previously learned.	tell, recite, list, memorize, remember, define, locate	workbook pages, quiz, test, exam, vocabulary, facts in isolation

Other Uses for Bloom's Taxonomy

Teachers can use levels of questioning to provide assignments that meet a wide range of needs and provide choices so that students become more engaged in their own learning.

Students can use Bloom's Taxonomy to

- design questions that involve higher-level thinking, for example:
  - In a co-operative group, design a review quiz on a unit of study that is exchanged for completion with another group.
  - Develop a list of personal questions about a new unity of study.
  - Write questions that occur to them as they read a novel in their response journals.
  - Use the Bloom's Taxonomy model on the previous page to create questions for teachers to use for discussions or texts—once students have learned the language of the taxonomy, they can create a certain number of questions by category.

- direct independent projects, for example:
  - A pair of students develops a learning centre for the class, based on a unit of study, using Bloom's Taxonomy—other students use the centre for enrichment.
  - A student develops research questions for independent study and proposes a product to demonstrate learning.
- demonstrate learning, for example:
  - At a student-led conference, share examples of learning reflected at different levels.

Appendix 5-18

Independent Study for Credit: Interim Guidelines and Policy

With teacher support and coaching the student learns how to decide on a focus, develop a plan of action and follow it through, and monitor the learning process. The student takes part in developing criteria for evaluation and works with the teacher as a partner.

An independent study credit should be designed to provide students with an opportunity to

- apply interests, knowledge, creative ideas, and task commitment to a self-selected problem or area of study
- acquire advanced-level understanding of the knowledge (content) and methodology (process) that is used within particular disciplines, artistic areas of expression, and interdisciplinary studies

Nova Scotia Department of Education Policy

1. A student may be granted one independent study credit in each of grades 11 and 12. Each of these credits may comprise two half-credits. A student may earn two independent study credits towards graduation.
2. The student's application to pursue an independent study credit must be approved by the supervising teacher, the guidance counsellor, and the principal. Permission for a student to pursue an independent study credit is granted at the discretion of the school within Department of Education guidelines; therefore, there is no requirement to send the application to the Department of Education.
3. Schools should forward the approved independent study credit application to the Department of Education's English Program Services to obtain a course code.
4. A student may receive an independent study credit in addition to credit for a public school program course in the same subject at the same grade level when the independent study extends the curriculum of a public school program course the student has already taken.
5. The timeline for the application process should be determined by the school, however courses developed as independent study credits should normally be completed in a minimum of 110 hours for full-credit courses and 55 hours for half-credit courses.

6. Independent study credits are not intended to replicate any existing course in the public school program.
7. A copy of the approved application form should be filed in the student's cumulative record.
8. The student must maintain a portfolio of all components of the independent study credit (e.g., application, management plan, learning log, journal, evaluations).

An independent study credit should be a/an

- student-directed research project that is planned with the teacher/mentor and monitored frequently
- investigative activity and/or artistic production in which the student assumes the role of a first-hand inquirer
- project for solving real-life community problems
- real-world investigation that uncovers new questions and helps create a lifelong love of learning
- long-term, in-depth study culminating in an original product or service

An independent study credit should reflect

- advanced familiarity with the subject matter for a student of this age/grade level
- a level of quality beyond what is normally expected of a student of this age/grade level
- care, attention to detail, and overall pride
- a considerable commitment of time, effort, and energy

Designing the Independent Study Credit

- The student is responsible for initiating the independent study credit process and satisfying all of its requirements with minimal adult direction.
- The supervising teacher's/mentor's major contributions include helping students find and focus on the problem, focusing on methodology, the editorial and feedback process, and finding outlets and audiences for student products.
- The terms and conditions must be put in writing and agreed upon by the teacher, student, and parent/guardian. These should include guidelines for working conditions and locations, evaluation and grading rubrics, and a monitoring schedule.

- The student must develop a written management plan that consists of the following:

1. A *learning plan or course outline* that includes:
    - the expected learning outcomes
    - a relationship of course elements to the essential graduation learnings
    - the course content and organization, with timelines
    - resources
    - a detailed plan of learning experiences and activities

2. An *assessment and evaluation plan* that details the procedures and strategies, and includes:

- a learning log or chronicle to record the activities and dates
- a monitoring schedule for the supervising teacher (i.e., meeting times, dates, and durations and a list of tasks and timeline for completion)
- a journal of written reflections on the learning attained through independent study
- a Student Product Assessment Form
- other appropriate evaluation tools (e.g., mentor's report, performance grading rubric)

Steps for Independent Study

1. **Introduce the independent study:** Define the process, describe the steps, and establish deadlines and an authentic audience.
2. **Select a topic:** Gather information about the topic; invite in experts, go on field trips, and set up learning centres. Think about the practicalities of time and the available resources.
3. **Organize the study:** Map the topic to find specific questions or problems.
4. **Ask questions:** Good questions lead to quality independent studies. Criteria for good study questions include complexity (several possible answers), practicality, usefulness, and high-level thinking (Bloom's Taxonomy).
5. **Choose a study method:** Do NOT rely on encyclopedias and the Internet. The questions determine the study methods, and the focus is on authenticity of inquiry methods with a mix of primary and secondary resources.

6. **Gather information:** The questions and study method determine the information gathering (e.g., observation, interviews, surveys, focus groups, note taking, brainstorming, field trips, experiments, hands-on activities, synthesis, paraphrasing).
7. **Develop a product:** The product must match the original research question and be authentic within a field of study. A written report is not suitable for all questions. Consider books, performances, diagrams, models, posters, puppet shows, tape recordings, videos, speeches, dramatizations, newspapers, songs, poetry, etc.
8. **Share information:** There is life beyond the product. Projects are not meant for private consumption, to be graded and then thrown out. Ways to share are determined by the type of audience (e.g., display, performance, oral presentation).
9. **Evaluate the study:** Evaluations should focus on what the student has learned and what could be done to improve the next project. The Student Product Assessment Form rates the statement of purpose; problem focus; level, diversity, and appropriateness of resources; logic, sequence, and transition; action orientation; and audience. Formative evaluations examine performance in terms of the overall process; self, audience, and teacher evaluations should be collected and reviewed. Summative evaluations include checklists or rubrics and specific criteria for the type of product.

Application for Approval of an Independent Study for Credit

Name: ______________________ Beginning date: ______________________

School: ______________________ Estimated end date: ______________________

Grade: ______________________ Supervising teacher: ______________________

Title/topic/research question of independent study:

____

Summary/overview of project (please be as specific as possible):

____

____

____

____

____

Type/format of final product: ______________________

Intended audience(s): ______________________

Mentor (if applicable): ______________________

Approved

Supervising teacher: ______________________ Date: ____________

Guidance counsellor: ______________________ Date: ____________

School principal: ______________________ Date: ____________

Course code for transcript: ______________________ (course, level, and credit type/value)

All sections must be completed in as much detail as possible.

(Application for Approval of an Independent Study for Credit *Continued*)

Rationale For Independent Study

(Learning outcomes, goals, learning needs, abilities, and interests that will be met through independent study)

Learning and personal goals:

- ____
- ____
- ____

Learning needs (preferences for thinking styles, learning environment, expression styles, etc.; see Style Preferences Appendix 3-10):

- ____
- ____
- ____

Abilities:

- ____
- ____
- ____

Interests:

- ____
- ____
- ____

(Application for Approval of an Independent Study for Credit *Continued*)

Action Plan For Independent Study

1. Learning Plan

You will need to research Nova Scotia Department of Education publications to plan some of your project's outcomes and activities. Your supervising teacher or guidance counsellor may have copies you can borrow. You can read/download appropriate documents from the Department of Education at www.ednet.ns.ca. Select "Curriculum 8 Textbooks" to find the following: Curriculum Documents for NS Schools, Learning Outcomes Framework documents, and Public School Program.

A. Expected learning outcomes

What do you expect to know and be able to do as a result of your independent study? Please list these outcomes. (Use the same format as the Department of Education documents.)

I will know:

- ______________________________
- ______________________________

I will be able to:

- ______________________________
- ______________________________

B. Relationship of course elements to essential graduation learnings

In what ways will your independent study help you to develop some or all of the essential graduation learnings? (Refer to *Public School Programs* for more detail.)

☐ Aesthetic expression: ______________________________
☐ Citizenship: ______________________________
☐ Communication: ______________________________
☐ Personal development: ______________________________
☐ Problem solving: ______________________________
☐ Technological competence: ______________________________

C. Overall course content and organization

☐ Major topics: ______________________________
☐ Timeline: ______________________________
☐ Deadlines: ______________________________

(Application for Approval of an Independent Study for Credit *Continued*)

D. Learning resources

Keep a running account of any and all resources that are used as you pursue the planning, research, and product development of this project. The material resources listed should ultimately serve as the bibliography of your product. The list of human resources should serve as a special appendix to your final product.

- Community resources: ______________________________
- Human resources: ______________________________
- Resources: ______________________________
- Technologies: ______________________________

E. Learning experiences and activities (Please provide a detailed list of activities undertaken.)

- ______________________________
- ______________________________
- ______________________________

F. Plan to demonstrate the results of your learning (e.g., performance, portfolio, exhibit)

____

____

____

2. Assessment and Evaluation Plan

This plan must provide details on the strategies you and your teacher/mentor will use to assess your own learning and performance. **Students must include all of the components (a–e) listed below.**

Plan assessment tasks/assignments that are logical and reasonable for the type of product you are developing and the time frame in which you are working. Questions to consider include: How will you demonstrate what you know and are able to do as a result of your independent study? On what basis/criteria will the final mark for your independent study be determined?

(Application for Approval of an Independent Study for Credit *Continued*)

Criteria for final mark: Decide on the inclusion of and values for each of the following evaluation components:

A. **Chronicle of learning/learning log:** Explain the details of how you will record your learning experiences. (e.g., how often, the format, the length of each entry).

B. **Monitoring schedule for supervising teacher:** For what reasons, how often, when, and where will you meet with your supervising teacher? Students must meet with the supervising teacher at least twice a term.

C. **Journal of written reflections on learning attained through the independent study:** Students must submit at least one written reflection to the supervising teacher at each visit and one overall final reflection at the completion of the independent study.

D. **Student Product Assessment Form:** to be completed by the supervising teacher/mentor (See p.183.)

E. **Other appropriate evaluation tools:** rubrics, rating scales, mentor evaluations, grades, etc.

Mandatory Evaluations

1. Student final reflection (mandatory, upon completion of the project)

1. What do you like best about your project? Why?
2. What were the most difficult steps? How did you overcome these difficulties?
3. What are some of the new skills you learned while working on this project?
4. In what ways was your action plan reasonable? In what ways might you have improved your plan?
5. Who else was interested in your project? With whom did you share your results? How did you do this? What was the reaction of your audience(s)?
6. Do you have unanswered questions about the topic? Do you have ideas on how you might like to extend/expand this project or any ideas for new projects?
7. Overall, how successful was your independent study? Explain.
8. Additional comments:

(Application for Approval of an Independent Study for Credit *Continued*)

2. Student Product Assessment Form

Optional Evaluations

Student-Mentor Project Evaluation Form

Criteria can be changed to suit the project. Changes must be made before the project is evaluated.

The student, mentor, and teacher each complete a form independently and then meet to discuss their ratings and decide on a final evaluation/grade.

Check the appropriate box: ☐ Student ☐ Mentor ☐ Teacher

	Circle One Choice				
Criteria	**Poor**	**Fair**	**Average**	**Good**	**Great**
Appropriate choice of topic/theme	1	2	3	4	5
Depth and breadth of research	1	2	3	4	5
Used a variety of resources	1	2	3	4	5
Evidence of creativity	1	2	3	4	5
Planning/organization	1	2	3	4	5
Used time wisely	1	2	3	4	5
Learned advanced knowledge and/or skills	1	2	3	4	5
Developed a high-quality, authentic product	1	2	3	4	5
Presented the product to a real audience	1	2	3	4	5
Self-determined criteria:					
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5

Particular strengths: ______________________________

____

Possible improvements to consider: ______________________________

____

Signature: ______________________________ **Date:**______________

Appendix 5-19

Challenge For Credit

Interim Policy Guidelines

Background

The Nova Scotia Department of Education recognizes that students may have already acquired the knowledge, skills, and attitudes that an existing course seeks to develop. Challenge for credit provides a process for students to demonstrate that they have achieved learning outcomes as defined in the *Public School Programs* and the curriculum guide for a directly related course.

Policy

1. All students currently enrolled in a public school in Nova Scotia may challenge for credit.
2. Challenge for credit is applicable only to designated Nova Scotian senior high school courses.
3. Students may challenge for any number of credits, but no more than two credits at each grade level (for a total of six) will count toward a Nova Scotia High School Graduation Diploma.
4. Courses for which students have already received credit are not eligible for challenge for credit.
5. Challenge for credit is not intended as a way to improve a course mark. Similarly, challenge for credit is not intended as a process by which a student can challenge a lower-level course in the same subject at the same grade level as another course that the student has not completed successfully.
6. Successful challenges for credit will be given a mark.

Guidelines

Challenge for credit will involve a four-step process: (1) notice of intent to challenge, (2) consultation, (3) evidence of learning, and (4) evaluation.

1. Notice of Intent to Challenge

A student completes a notice of intent form as prescribed by the school board.

2. Consultation

After a student has given notice of intent to challenge for credit, a meeting shall be held with the student, his or her parent/guardian (if applicable), and school personnel. If a number of students challenge for the same credit, the meeting may be held in a group format. The purpose of the meeting is to outline the process and requirements for a successful challenge. Students should consider whether it is in their best interests to proceed with the challenge.

Schools may wish to provide a seminar for students and parents/guardians to outline the challenge for credit requirements, process, and related procedures.

3. Evidence of Learning

Students will provide evidence that they have acquired the learning necessary to meet the outcomes of the course. The evidence should be organized based on the prescribed outcomes and may include the following:

- a portfolio containing a description of the activities, experiences, readings, and other items as necessary that indicates the attainment of the outcomes
- a demonstration or performance, if applicable
- the written support of at least one person with recognized expertise in the area of the challenge

4. Evaluation

Challenge for credit is intended to be a thorough process. To ensure adequate and valid evaluation of achievement, a variety of strategies should be used. Appropriate evaluation strategies include reviewing a portfolio of student work, a laboratory/skills demonstration, oral/aural performances, tests/exams, interviews, and documented learning.

The evaluation of the challenge for credit is carried out by a school or teaching personnel of the region or school. Subject-area specialists with acknowledged expertise outside the school (e.g., artists, musicians, mathematicians) may be invited by the board or school to assist the teaching personnel responsible for the evaluation.

Time Frame

School board policy may establish specific times for accepting and reviewing challenge for credit applications.

Regions may opt for a "Challenge Week" at the start of the school year or a semester. Others may decide challenges must be completed at specific times so that courses can be planned for the upcoming year. If a small number of students are requesting a challenge, scheduling the challenge process at the convenience of all participants may be more manageable than setting specified times.

It is recommended that schools provide a seminar on available opportunities for challenge for credit for students and parents/guardians so that they can become familiar with the requirements, student responsibilities, challenge process, and related procedures.

It is recommended that the time frame for the process should not normally exceed four weeks from the start of the consultation step.

Exceptions

Externally developed courses recognized for credit by the Department of Education are not eligible for the challenge for credit process (e.g., the International Baccalaureate Diploma Programme).

Appendix 5-20

Creative and Critical Thinking

Creative Thinking

What is it?

- original and appropriate thinking
- having unusual ideas and innovative thoughts
- involved with the creation or generation of ideas, processes, experiences, or objects
- involves creating a different idea that works as well as or better than previous ideas
- involves the processes of fluency, flexibility, originality, and elaboration, which are associated with the development of creative-thinking skills and strategies
- developing new and novel ideas and fresh solutions to a particular problem

Why Teach It?

- increases ingenuity, originality, and insightfulness
- because creativity does not happen in a vacuum
- to create new ideas and objects
- to make new connections or extend ideas
- to develop creative ways to solve a problem
- to learn to examine real issues or problems
- interrelated with critical thinking

Critical Thinking

What is it?

- actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating
- involves the examination of a purpose or problems or questioning an issue
- a mode of thinking in which the thinker improves the quality of his or her thinking
- a thinker learning to ask questions
- self-directed, self-disciplined, self-monitored, and self-corrected thinking
- seeing other points of view and reaching sound conclusions
- the capacity to see relationships methodically

Why Teach It?

- to assist in solving real life problems
- to learn to know and understand one's own thinking processes
- teaches you to look at all sides of an issue
- makes you aware of the strengths and weaknesses of opposing views
- helps students move beyond memorization or passive acceptance
- helps students work toward clarity and insight
- interrelated with creative thinking

Ideas for Including Critical and Creative Thinking in Your Curriculum

- Teach debating to your class.
- Incorporate SCAMPER (see Appendix 5-12).
- Use Bloom's Revised Taxonomy to develop lessons or questions. Teach Bloom's Taxonomy to your class and have the students develop and answer questions at all levels.
- Develop a lesson using Edward de Bono's Six Thinking Hats.
- Teach the class Donald Treffinger's Creative Problem Solving model.
- Look for ideas at the *Odyssey of the Mind* website (www.odysseyofthemind.com/whatis.php) to stretch the minds of your students.

Appendix 5-21

Critical and Creative Thinking for Gifted Students through FPSPI

Source: Fertig 2008. Used by permission from Prufrock Press.

Teaching critical and creative thinking is vital to the future of our youth. The Future Problem Solving Program International (FPSPI) is a program that really hones in on this subject.

We all have problems we'd like to solve. Some people aren't very good at math. Some people have nosy neighbours. Some people go to bed hungry at night. No matter how small or how big the problems are, we'd like to solve them. It's hard to solve a problem, though, unless we understand it very well. Who is involved in the problem? What is the problem? When and where does the problem occur? Why does the problem happen? How does it occur? The first step in successful problem solving is defining and describing the problem.

This is just one type of thinking fostered by FPSPI. The program (for students in grades 4–12) stimulates critical and creative thinking skills and encourages young people to develop visions for the future through both individual and team activities. It nurtures global awareness not only through choice of topics but by the knowledge that the same problems are being studied by over 250,000 students annually, including those from Australia, Canada, Hong Kong, Korea, Malaysia, New Zealand, Russia, and the United States.

Curricular and co-curricular competitive activities, as well as non-competitive activities, are offered.

Through FPSPI, students learn to

- formulate and attack complex, ambiguous problems
- analyze and better understand material
- improve their oral and written communication
- work together in a team

You can get an idea of the scope of current and future topics by reading their descriptions at the program's website www.fpspi.org.

Even if your students never participate in the formal program, the organization's website contains good instructional materials for critical and creative thinking. Materials include both written offerings available for purchase and also links to other websites.

Section 6

The Program Planning Process

"A mind, once stretched, never returns to its original shape."

– Oliver Wendell Holmes

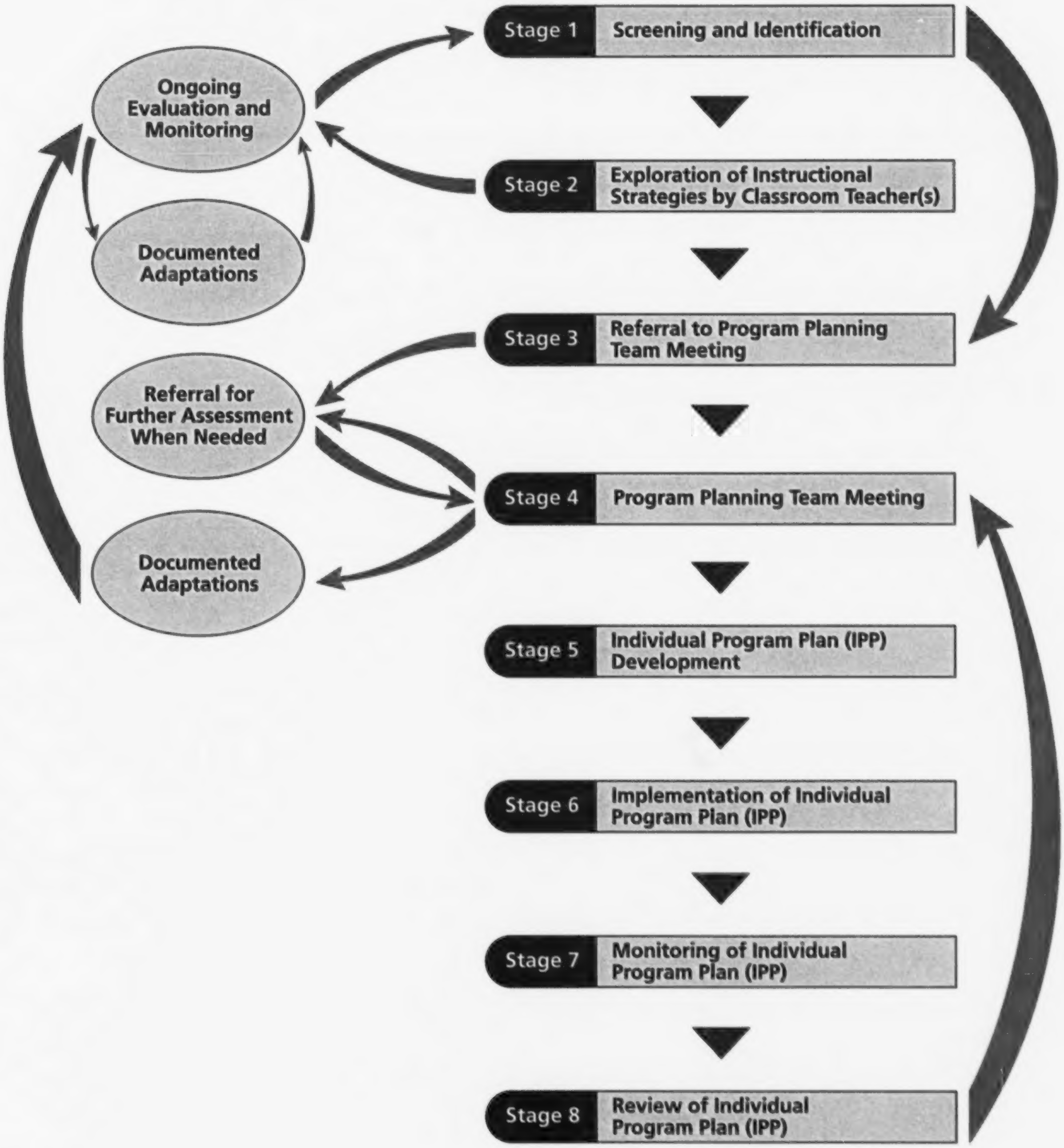
Section 6: The Program Planning Process

Program supports may be provided in a variety of ways. A program planning team may highlight the need for curriculum, instruction, and assessment to be differentiated effectively at the classroom level, with a focus on gifted programming and strategies. Despite regular differentiated instructional practices, particular gifted and/or talented students may have learning needs that require more extensive programming.

The program planning process for students with gifts and talents follows the process used for any student with special needs and is explained in the diagram on the following page. Winebrenner and Devlin (1994) note that students with gifts and talents need exactly what all other students need: "consistent opportunities to learn new material and to develop the behaviours that allow them to cope with the challenge and struggle of new learning." Program planning is as important for gifted students as it is for any student with special needs.

During the program planning process school personnel are encouraged to consider "only as special as necessary" as a guiding statement. Be certain to consider the questions found in Appendix X of *Supporting Student Success: Resource Programming and Services* (Nova Scotia Department of Education 2006) in the context of the special needs of students with gifts and talents. School personnel must not conclude that because a student is independently participating in the classroom they do not require further support, planning, or opportunities to grow.

Identification, Assessment, and Program Planning


Stage 1 Screening and Identification
Ongoing Evaluation and Monitoring
Stage 2 Exploration of Instructional Strategies by Classroom Teacher(s)
Documented Adaptations
Stage 3 Referral to Program Planning Team Meeting
Referral for Further Assessment When Needed
Stage 4 Program Planning Team Meeting
Documented Adaptations
Stage 5 Individual Program Plan (IPP) Development
Stage 6 Implementation of Individual Program Plan (IPP)
Stage 7 Monitoring of Individual Program Plan (IPP)
Stage 8 Review of Individual Program Plan (IPP)

Within the stages of program planning there are considerations specific to gifted and talented learners, as follows

Stage 1: Screening and Identification

Stage 1 of the program planning process begins with the identification of student strengths and challenges. This information indicates whether additional planning is necessary to provide opportunities for students to be engaged and reach their potential. More information about the identification process is available in *Program Planning Process: A Guide for Parents* (Nova Scotia Department of Education 2006, p. 8).

The program planning team would benefit from information provided in the student portfolio. A tool such as the Total Talent Portfolio (Purcell and Renzulli 1998) provides an opportunity for the systematic compilation of information and evidence in a variety of formats.

Stage 2: Exploration of Instructional Strategies by Classroom Teacher(s)

This is a dynamic process that takes place at the classroom level and includes exploration, selection, implementation, and evaluation of an adaptation in one or more of the following areas: presentation, assessment/evaluation, motivation, environment, class organization, and resources. Adaptations are documented in the student's cumulative record. The classroom teacher plays a central role in identifying and implementing strategies designed to meet students' needs as well as in evaluating and recording the outcomes of using these strategies. This exploration is collaborative in nature and draws upon the wealth of experiences available in and to the school.

For more information on instructional strategies, see Differentiation of Curriculum, Instruction, Assessment, and Environment in Section 5: Classroom Programming Options.

For more information on adaptations, see Appendix III: Adaptations in *Supporting Student Success: Resource Programming and Services* (Nova Scotia Department of Education 2002).

Stage 3: Referral to Program Planning Team Meeting

- A referral is made when further program planning is required to address the learning needs of the student.
- The referral format depends on school/regional procedures. Appendix IV: Sample Referral Forms, Program Planning Team of *Supporting Student Success: Resource Programming and Services* (Nova Scotia Department of Education 2006) provides examples of referral forms.
- The information gained in Stage 2 of the program planning process is critical for making an appropriate and complete referral.

Stage 4: Program Planning Team Meeting

Based on the student's strengths in relation to the learning outcomes, the program planning team decides whether to develop adaptations beyond those implemented at Stage 2, while maintaining the public schools program outcomes and/or developing an individual program plan (IPP).

The program planning team should include the

- principal or vice-principal
- teachers involved
- parent(s)/guardian(s)
- student

(*Special Education Policy*, Nova Scotia Department of Education 2008)

Additional school board coordinators and/or consultants with expertise in gifted education and talent development related to a student's strengths and challenges may also assist the program planning team during the development of a program plan.

Stage 5: Individual Program Planning Development

When designated learning outcomes are changed to meet the needs of students or additional outcomes are developed, an IPP must be developed and implemented. For students requiring extended challenges in order to meet their unique intellectual, artistic, creative, or leadership needs a combination of programming strategies and options should be considered by the program planning team. See *Challenge for Excellence: Program Planning DVD* (Nova Scotia Department of Education 2006) for a framework and options for programming strategies.

The program planning team should review the contents of the student's Total Talent Portfolio information, which may include

- academic achievement (e.g., student products, previous report cards, informal and formal classroom assessment, personal learning logs, psycho-educational testing)
- learning styles, strengths, interests, and special abilities (e.g., inventories, rating scales, conferencing, portfolios, co-curricular and extracurricular involvement, hobbies, information from parents/guardians)
- visions and goals for the future (e.g., journals, career inventories, community interests, secondary and post-secondary education planning)

An IPP for students with gifts and talents should

- provide advanced learning opportunities
- increase self-directed learning behaviours
- enhance talent development
- increase intrinsic motivation for learning

The signed IPP is to be filed in the student's cumulative record.

Stage 6: Implementation of Individual Program Plan

Program planning team members assume responsibility for the implementation of the IPP and/or adaptations.

Stage 7: Monitoring Individual Program Plan

Ongoing monitoring of progress by the program planning team members toward the achievement of the student learning outcomes is necessary.

Stage 8: Review of Individual Program Planning

Program planning teams are responsible for setting dates for the review of the overall plan prior to each reporting period. IPPs for gifted students may need to be reviewed more frequently as the goals of the plan are being met.

Section 7

Professional Development and Additional Resources

> "Society gains from the advancement of all abilities and from the highest development of all its members, whatever their strengths. That which nurtures and actualizes each individual nourishes us as a society."
>
> – Clark 1992

Section 7: Professional Development and Additional Resources

Professional Development on Gifted Education and Talent Development

Professional Development

Teachers need and appreciate ideas, strategies, resources, and other forms of support in working with a diverse range of students. Some of this support emerges naturally within the school as teachers work collegially and share techniques and materials. Other contributions come from each teacher's reading, research, and experience.

Nevertheless, more formal professional development opportunities are valuable. Discussions with peers teaching the same subject or grade level in other schools facilitate learning and sharing. Workshops, mini-courses, school-based in-services, institutes, and university courses help teachers to further address their needs and interests regarding programming for students with gifts and talents.

The following areas are suggested as possible topics for professional development for teachers and principals in meeting diverse learning needs.

Professional Development Topics for Teachers

- identifying diverse learning needs in the classroom by using observational strategies, information-gathering techniques and portfolio assessment
- understanding the intellectual and social/emotional needs of students
- involving parents/guardians in active and meaningful ways
- extending existing classroom teaching techniques and managing a classroom in which there is a wide range of learners
- differentiating instruction and inclusive teaching strategies

- developing individual program plans for students with gifts and talents
- supporting students in the classroom through reflective opportunities
- using community resources
- understanding and implementing the Theory of Multiple Intelligences and its practice in the classroom
- grouping techniques
- questioning strategies

Professional Development Topics for Principals

- formulating the school's philosophy, goals, and objectives related to diverse learners
- communicating with the community
- providing professional development opportunities for teaching staff, school counsellors, and school psychologists
- supporting teachers' needs
- developing and implementing a plan for schoolwide enrichment
- establishing program planning teams
- establishing networks among schools

Teachers need to have planning time to come together to share ideas, innovative teaching strategies, resources, etc. School boards may arrange to have teachers from similar grade levels or subject areas meet to develop learning extensions to the curriculum. Another venue through which ideas may be shared among colleagues is a regional newsletter or a website. These provide teachers with a format to share activities, resources, and innovative teaching strategies. Summer institutes and seminars allow for focused and intensive professional development as well as time to reflect and share among peers.

Professional Development Websites

The following websites provide information on professional development opportunites:

- "Summer Institute on Enrichment Learning and Teaching" University of Connecticut: www.gifted.uconn.edu/confratute
- National Association for Gifted Children (NAGC) Annual Convention: www.nagc.org/index.aspx?id=2692

Gifted Education and Talent Development Websites

(Recommended by NAGC Teacher Training Specialist, Rebecca Eckert, Ph.D.)

- www.nagc.org
  - Related resource links: www.nagc.org/index.aspx?id=692
  - Content connections page (though not focused on gifted): www.nagc.org/index.aspx?id=990
- www.hoagiesgifted.com
- www.hoagiesgifted.org/organizations.htm
- www.ericdigests.org
- www.gifted.uconn.edu
- abccalgary.org/test7.html
- www.bced.gov.bc.ca/specialed/gifted/
- connections.smsd.org/nieman/best.htm offers links to sites with great lessons, online activities, and resources for gifted students from grades K–12
- www.readwritethink.org/lessons
- The U.S. Department of Education operates a database containing more than one million records going back to 1966. More than 100,000 non-journal documents (issued 1993–2004) are available in full text at no cost: www.eric.ed.gov.
- The Educator's Reference Desk provides high-quality resources and services, 2,000+ lesson plans, 3,000+ links to online education information, and more: www.eduref.org/cgi-bin/res.cgi/Subjects.

Suggested Readings for Mathematics

- Ainslie, E. et al. *More Puddle Questions for Canadian Schools: Assessing Mathematical Thinking*. Toronto, ON: McGraw Hill Ryerson, 2004.
- Cooney, Miriam P. *Celebrating Women in Mathematics and Science.* Reston, VA: National Council of Teachers of Mathematics, 1996.
- Erickson, Tim. *United We Solve: 116 Math Problems for Groups.* Oakland, CA: Eeps Media, 1995. (www.eeps.com)
- Gavin, M. K. et al. *Awesome Math Problems for Creative Thinking.* Mountain View, CA: Creative Publications, 2000. (www.wrightgroup.com)
- Greenes, Carole. *MEGA Projects: Math Explorations and Group Activity Projects.* Palo Alto, CA: Dale Seymour Publications, 1996.
- Murray, Miki. *The Differentiated Math Classroom: A Guide for Teachers.* Portsmouth, NH: Heinemann, 2007.
- Reimer, Luetta. *Mathematicians Are People Too: Stories from the Lives of Great Mathematicians.* Palo Alto, CA: Dale Seymour Publications (Volumes 1 and 2), 1996.
- Reimer, Wilbert and Luetta Reimer. *Historical Connections in Mathematics (Volumes I, II, and III): Resources for Using History of Mathematics in the Classroom.* Fresno, CA: AIMS Education Foundation, 1992. (www.aimsedu.org)
- Schuster, Lainie, and Nancy Canavan Anderson. *Good Questions for Math Teaching: Why Ask Them and What to Ask (Gr. 5–8).* Sausalito, CA: Math Solutions Publications, 2005.
- Sheffield, Linda Jensen. *Extending the Challenge in Mathematics: Developing Mathematical Promise in K–8 Students.* Thousand Oaks, CA: Corwin Press Inc., 2003.
- Sullivan, Peter, and Pat Lilburn. *Good Questions for Math Teaching: Why Ask Them and What to Ask (Gr. K–6).* Sausalito, CA: Math Solutions Publications, 2002.

Section 8

Bibliography

"Books serve to show a man that those original thoughts of his aren't very new after all."

– Abraham Lincoln

Section 8: Bibliography

Alberta Learning. *Academic Challenge: A Programming Guide*. Edmonton, AB: Province of Alberta, 1988.

Alberta Learning. *Programming For Students With Special Needs: Teaching Students Who Are Gifted and Talented*. Edmonton, AB: Province of Alberta, 2000.

Anderson, Lorin W. and David R. Krathwohl, eds. *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. New York, NY: Longman, 2001.

Armstrong, Thomas. *Multiple Intelligences in the Classroom*. 3rd ed. Alexandria, VA: Association for Supervision and Curriculum Development, 2009.

Armstrong, T. "Multiple Intelligences." Dr. Thomas Armstrong, 2010. www.thomasarmstrong.com/multiple_intelligences.php.

Aucoin, Glenn. "The Crucible R.A.F.T. Assignment." *Classroom Activity Sheets*. Halifax, NS: Halifax Regional School Board, 2006.

Barell, J. "Creating Our Own Pathways: Teaching Students to Think and Become Self-Directed." *Handbook of Gifted Education*, edited by N. Olangelo and G. Davis. Boston, MA: Allyn & Bacon, 1991.

Baska, L. K. "Characteristics and Needs of the Gifted." *Excellence in Educating the Gifted.* Denver, CO: Love Publishing, 1989.

Bechtol, William M., and Juanita S. Sorenson. *Restructuring Schooling for Individual Students*. Boston, MA: Allyn and Bacon, 1993.

Beecher, Margaret. *Developing the Gifts and Talents of All Students in the Regular Classroom.* Mansfield Center, CT: Creative Learning Press, Inc., 1996.

Benbow, C. P., and J. C. Stanley. *Academic Precocity*. Baltimore, MD: The John Hopkins University Press, 1983.

Benbow, C. P. "Challenging the Gifted: Grouping and Acceleration." *Gifted Child Quarterly* (Special Issue) 36, no. 2 (1992).

Bienhler, Douglas. "The Road Not Taken: The Gifted? Who are They?" *Challenge* 48: (1992).

Black Learners Advisory Committee. *BLAC Report on Education, Redressing Inequity—Empowering Black Learners.* Halifax, NS: Black Learners Advisory Committee (NS), 1994.

British Columbia. Ministry of Education. *Gifted Education: A Resource Guide for Teachers.* Victoria, BC: Province of British Columbia, 1995.

Canada. "Seeing, Hearing, and Doing Quiz." Service Canada, 2010. www.jobsetc.gc.ca/eng/toolbox/quizzes/quizzes_home.do.

Casey, K., and B. M. Shore. "Mentors' Contributions to Gifted Adolescents' Affective, Social, and Vocational Development." *Roeper Review* 22, Part 4 (2000): 227–230.

Canadian Education Association Survey. *The Gifted and Talented Students in Canada.* Toronto, ON: The Canadian Education Association, 1980.

Cianciolo, A. T., and R. J. Sternberg. *Intelligence: A Brief History*. Malden, MA: Blackwell Publishing, 2004.

Clark, Barbara. *Growing Up Gifted.* New York, NY: Macmillan Publishing Company, 1992.

———. *Growing up Gifted: Developing the Potential of Children at Home and at School.* 3rd ed. Columbus, OH: Charles E. Merrill Co., 1988.

Clarke, J., K. Wideman, and S. Eadie. *Together We Learn*. Scarborough, ON: Prentice-Hall Canada Inc., 1990.

Clifford, P., and S. L. Friesen. "Results of Broad-based Theme Teaching." Victoria, BC: [Unpublished raw data], 1994.

———. "Teaching and Practice: A Curious Plan: Managing on the Twelfth." *Harvard Educational Review* 63, no. 3 (1993): 339–357.

Coleman, Laurence J., and Michael D. Sanders. *Journal of Secondary Gifted Education* 5, no. 1 (Fall 1993): 1047–1885.

Cormier, Tara. "Pensons <<vert>>: Français 12^{e} année." Classroom Activity Sheets. Halifax, NS: Halifax Regional School Board, 2006.

Cornfield, R. J., K. Coyle, B. Durrant, K. McCutcheon, J. Pollard, and W. Stratton. *Making the Grade: Evaluating Student Progress.* Scarborough, ON: Prentice-Hall Canada Inc., 1987.

Costa, Arthur, and Robert J. Garmston. *Cognitive Coaching Learning Guide.* Highland Ranch, CO: Centre for Cognitive Coaching, 2009.

Council for Exceptional Children. *Standards for Programs Involving Gifted and Talented Students.* Arlington, VA: Council for Exceptional Children, 1989.

Dabrowski, K. *Positive Disintegration.* Boston, MA: Little Brown and Co., 1964.

———. *Psychoneurosis is Not an Illness.* London, ENG: Gryf Publications, 1972.

———. "The Heroism of Sensitivity." Translated by E. Hyzy-Strzelecka. *Advanced Development Journal* 6 (1979/1994): 87–92.

Davidson, Janet E., and Robert J. Sternberg. "The Role of Insight in Intellectual Giftedness." *Gifted Child Quarterly*, v28 no. 2 (Spring 1984).

Davis, Gary, and Sylvia Rimm. *Education of the Gifted and Talented.* 5th ed. Columbus, OH: Merrill, 2004.

deBono, E. *CORT Thinking: 1–6.* Willowdale, ON: Pergamon Press Inc., 1976.

Delisle, James R. *Guiding the Social and Emotional Development of Gifted Youth.* New York, NY: Longman Publishing Group, 1992.

Dixon, Felicia. "Literature Seminars for Gifted and Talented Students." *Gifted Child Today,* November/December (1994).

Drake, S. M. *Planning Integrated Curriculum: The Call to Adventure.* Alexandria,VA: Association for Supervision and Curriculum Development, 1993.

Eberle, B. F. *Scamper On: Games for Imagination Development.* East Aurora, NY: D.O.K. Publishers, 1987.

Edmonton Public Schools. *Academic Challenge: A Programming Guide.* Edmonton, AB: Resource Development Services, Edmonton Public Schools, 1988.

Feldhusen, J. F. "Programs for the Gifted Few or Talent Development for the Many?" *Phi Delta Kappan* 79, no. 10 (June 1998): 735–738.

Feldhusen, John, and Debra Ruckman. "A Guide to the Development of Saturday Programs for Gifted and Talented Youths." *Gifted Child Today* 11, no. 5 (1988).

Feldhusen, Hazel J. *Individualized Teaching of Gifted Children in Regular Classrooms.* East Aurora, NY. D.O.K. Publishers, 1986.

Fertig, Carol. "Creative and Critical Thinking for Gifted Students through FPSPI." *Prufrock's Gifted Child Information Blog (Saturday, January 12, 2008),* http://resources.prufrock.com/GiftedChildInformationBlog/tabid/57/Default.aspx.

Fogarty, Robin, and James Bellanca. *Patterns for Thinking, Patterns for Transfer: A Cooperative Team Approach for Critical and Creative Thinking in the Classroom.* 4th ed. Palatine, IL: IRI Group, 1989.

Gallagher, James. *Teaching the Gifted Child.* Boston, MA: Allyn and Bacon Inc., 1975.

Galt, Virginia, and Miro Cemetig. "Two Schools Apart." *Globe and Mail,* April 26, 1997, p. A1.

Gamberg, R., W. Kwak, M. Hutchings, and J. Altheim. *Learning and Loving It: Theme Studies in the Classroom.* Portsmouth, NH: Heinemann Educational Books Inc., 1988.

Gardner, Howard. *An Individual Centered Curriculum.* Washington, DC: Council of Chief State School Officers and the American Association of Colleges of Teacher Education, 1987.

———. *Frames of Mind: The Theory of Multiple Intelligences*. New York, NY: Basic Books Inc., 1983.

———. *Multiple Intelligences: The Theory in Practice*. New York, NY: Basic Books Inc., 1993.

Gibbons, M. *How to Become an Expert: Discover, Research and Build a Project in Your Chosen Field,* revised edition. Tuscon, AZ: Zepher Press, 1991.

———. *Pathways: A Personal Project Management System*. Bowen Island, BC: Personal Power Press International Inc., 1991.

Goleman, D. *Emotional Intelligence: Why it Can Matter More than IQ.* New York, NY: Bantam Books, 1995.

Gray, William. *Challenging the Gifted and Talented Through Mentor-Assigned Enrichment Projects*. Bloomington, IN: Phi Kappa Educational Foundation, 1983.

Gregory, G. H., and Kuzmich, L. *Differentiated Literacy Strategies for Student Growth and Achievement in Grades K-6*. Thousand Oaks, CA: Corwin Press, 2005.

Haeger, W. W, J. F. Feldhusen. *Developing a Mentor Program*. East Aurora, NY: D.O.K. Publishers, 1989.

Halifax Regional School Board. *Assessment, Evaluation and Communication of Student Learning Procedure*. Halifax, NS: Halifax Regional School Board, 2009.

Hazlitt, William. "On Old English Writers and Speakers," *The Plain Speaker: Opinions on Books, Men and Things, Vol. II.* London, ENG: Henry Colburn, 1826.

Hollingsworth, P. L. "Making it Through Parenting." *Gifted Child Today* 13 (1990): 2–7.

Hoskins, Barbara. *Developing Inclusive Schools: A Guide*. Bloomington, IN: CASE Research Committee, 1995.

Howley, A., C. B. Howley, and E. D. Pendravis. *Teaching Gifted Children Principles and Strategies*. Boston, MA: Little, Brown and Company, 1986.

Jacobs, H. H. *Interdisciplinary Curriculum: Design and Implementation.* Alexandria, VA: Association for Supervision and Curriculum Development, 1989.

Jennings, Peter, and Bill Blackmore. "Common Miracles: The New Revolution in Learning." *ABC News Special* (1993).

Johnsen, S. K. *Identifying Gifted Students: A Practical Guide*. Waco, TX: Prufrock Press, 2004.

Johnson, Nancy L. *Teaching to the Top Workshop*. Halifax, NS: Association of Teachers of Exceptional Children, Annual Conference, 1992.

———. *The Faces of Gifted: A Resource for Educators and Parents*. Dayton, OH: Creative Learning Consultants, 1989.

Kanevsky, L., C. J. Maker, A. Nielsen, and K. B. Rogers. "Brilliant Behaviours." In C.J. Maker and A. Nielsen, *Principles and Curriculum Development for the Gifted.* Austin, TX: Pro-Ed, 1994.

Kaplan, S. N. "The Grid: A Model to Construct Differentiated Curriculum For the Gifted." In *Systems and Models for Developing Programs For The Gifted and Talented.* Edited by J.S. Renzulli, Mansfield Center, CT: Creative Learning Press, Inc., 1986.

Kimeldorf, Martin. *Creating Portfolios for Success in School, Work, and Life.* Minneapolis, MN: Free Spirit Publishing, 1994.

Kingore, Bertie. "High Achiever, Gifted Learner, Creative Thinker." *Bertie Kingore, Ph.D.*, 2010. www.bertiekingore.com/high-gt-create.htm.

Kline, B. E., and E. B. Short. "*Chances in Emotional Resilience: Gifted Adolescent Females.*" *Roeper Review* 13 (1991): 118–21.

Kulik, J. A. *An Analysis of The Research on Ability Grouping: Historical and Contemporary Perspectives.* Storrs, CT: The National Research Center on the Gifted and Talented, 1992.

Kulik, J. A., and C. L. Kulik. "Meta-analytic Findings on Grouping Programs." *Gifted Child Quarterly* 36, no. 2 (1992): 77–133.

Lazear, David. *Seven Ways of Teaching: The Artistry of Teaching with Multiple Intelligences.* Palantine, IL: 1R1/Skylight Publishing, 1991.

Lohman, D., and J. Renzully. *A Simple Procedure for Combining Ability Test Scores, Achievement Test Scores, and Teacher Ratings to Identify Academically Talented Children (Draft)*. University of Iowa, 2007. http://faculty.education.uiowa.edu/dlohman/pdf/Lohman_Renzulli_ID_system.pdf.

McGreevy, A. *My Book of Things and Stuff: An Interest Questionnaire for Young Children*. Mansfield Center, CT: Creative Learning Press, Inc., 1982.

Montgomery County Public Schools. [Anchoring Activities]. 2008. Rockville, MD. Removed from Internet.

Norman, P. *The Self-Directed Learning Contract: A Guide for Learners and Teachers*. Burnaby, BC: Simon Fraser University, Faculty of Education, 1989.

Nova Scotia. *Human Rights Act*. 2007.

Nova Scotia. Department of Education. *Challenge for Excellence: Enrichment and Gifted Education Resource Guide*. Halifax, NS: Province of Nova Scotia, 1999.

———. *Challenge for Excellence: Enrichment Clusters DVD*. Halifax, NS: Province of Nova Scotia, 2005.

———. *Challenge for Excellence: Total Talent Portfolio DVD*. Halifax, NS: Province of Nova Scotia, 2006.

———. *English Language Arts Curriculum*. Halifax, NS: Province of Nova Scotia, 1997.

———. *Public Schools Program*. Halifax, NS: Province of Nova Scotia, 2004.

———. *Racial Equity Policy*. Halifax, NS: Province of Nova Scotia, 2002.

———. *Special Education Policy*. Halifax, NS: Province of Nova Scotia, 2008.

———. *Student Services Fact Sheets*. Halifax, NS: Province of Nova Scotia, 2010.

———. *Supporting Student Success: Resource Programming and Services*. Halifax, NS: Province of Nova Scotia, 2002.

Nova Scotia. Department of Education and Culture. *Advanced Courses Interim Policy Guidelines*. Halifax, NS: Province of Nova Scotia, 1999.

———. *Making the Arts Accessible to All Students: Report of the Ministers' Advisory Committee on Arts Education*. Halifax, NS: Province of Nova Scotia, 1995.

———. *Programming Handbook: Gifted Education*. Halifax, NS: Province of Nova Scotia, 1995.

Peterson, Jean Sunde, and Leslie Margolin. *Journal for the Education of the Gifted* 21, no. 1 (Fall 1997): 82–101.

Pfeiffer, S. I., and T. Jarosewich. "The Gifted Rating Scales-School Form." *Gifted Child Quarterly* 51, no.1 (2007): 39–50.

———. *Gifted Rating Scales*. San Antonio, TX: Pearson, 2003.

Piechowski, M. M., and N. B. Miller. "Assessing Developmental Potential in Gifted Children: A Comparison of Methods." *Roeper Review* 17, no. 3 (1995): 176–180.

Popham, W. J. *Transformative Assessment*. Alexandria, VA: Association for Supervision and Curriculum Development, 2008.

Punshon, Liz. "*Think Tac Toe.*" Classroom Activity Sheet. Halifax, NS: Halifax Regional School Board, 2004.

Purcell, J., and Renzulli, J. "*Total Talent Portfolio: A Systematic Plan to Identify and Nurture Gifts and Talents.*" Mansfield Center, CT; Creative Learning Press, Inc., 1998.

Rehner, Jan. *Practical Strategies for Critical Thinking*. Boston, MA: Houghton Mifflin, 1994.

Reis, S. M., D. E. Burns, and J. S. Renzulli. *Curriculum Compacting: The Complete Guide to Modifying the Regular Curriculum for High Ability Students*. Mansfield, CT; Creative Learning Press, Inc., 1992.

Renzulli, Joseph S. *A Rising Tide Lifts All Ships: Developing The Gifts and Talents of All Students*. University of Connecticut, 2010. www.gifted.uconn.edu/sem/semart03.html.

———. "*Interest-A-Lyzer Family of Instruments: A Manual for Teachers.*" Mansfield Center, CT: Creative Learning Press, Inc., 1997.

———. *Schools for Talent Development: A Practical Plan for Total School Improvement*. Mansfield Center, CT: Creative Learning Press, Inc., 1994.

———. *The Interest-A-Lyzer*. Mansfield Center, CT: Creative Learning Press, Inc., 1977.

———. "What makes giftedness? Re-examining a definition." *Phi Delta Kappan* 60 (1978): 180–184, 261.

Renzulli, Joseph S., and L. H. Smith. *Learning Styles Inventory: A Measure of Student Preference for Instructional Techniques*. Mansfield Center, CT: Creative Learning Press, Inc., 1978.

Renzulli, Joseph S., Linda H. Smith, Alan J. White, Carolyn M. Callahan, Robert K. Hartman, and Karen L. Westberg. *Scales for Rating Behavioural Characteristics of Superior Students*. Creative Learning Press, 2005.

Renzulli, Joseph S., and Sally Reis. *The Schoolwide Enrichment Model: A How-to Guide for Educational Excellence*. 2nd ed. Mansfield Center, CT: Creative Learning Press, Inc., 1997.

Rimm, Sylvia B. *Underachievement Syndrome: Causes and Cures*. Watertown, WI: Apple Publishing, 1986.

Roberts-Regan, Debra. "*Science 10: Weather Magazine Anchor Project*" Classroom Activity Sheets. Halifax, NS: Halifax Regional School Board, 2006.

Robinson, A., B. M Shore, and D. L. Enersen. *Best Practices in Gifted Education: An Evidence-based Guide*. Waco, TX: * Press, 2007.

Ryser, G., and K. McConnell. *Scales for Identifying Gifted Students*. Waco, TX: Prufrock Press, 2003.

Sapon-Shevin, M. "Giftedness as a Social Construct: Origins and Political Consequences of Differential Education." Paper presented at the annual meeting of the American Educational Research Association. San Francisco, CA: April 1986.

Sapon-Shevin, M. "*The Learning Disabled/Gifted: The Politics of Contradiction.*" *Learning Disability: Dissenting Essays*. New York, NY: Palmer Press, 1987.

Saskatoon Public Schools. "Instructional Strategies Online." Saskatoon Public Schools, 2010. http//olc.spsd.sk.ca/de/pd/instr/index.html.

Schack, G., and A. Starko. *Research Comes Alive: Guidebook for Conducting Original Research with Middle and High School Students*. Mansfield Center, CT: Creative Learning Press, Inc., 1998.

Sheffield, Linda Jensen. *Extending the Challenge in Mathematics: Developing Mathematical Promise in K–8 Students.* Thousand Oaks, CA: Corwin Press Inc., 2003.

Sheffield, Linda Jensen. "The Development of Gifted and Talented Mathematics Students and the National Council of Teachers of Mathematics Standards." University of Connecticut, 2010. www.gifted.uconn.edu/nrcgt/sheffiel.html.

Silverstein, Shel. *Where the Sidewalk Ends*. New York, NY. HarperCollins Publishers, 1974.

Smyth, E., and D. Matthews. *Gains and Challenges: Reflections on a Decade of Legislated Programming for Ontario's Gifted Students.* Toronto, ON: Ontario Institute for Studies in Education, 1993.

Starko, Alane. *It's About Time: Inservice Strategies for Curriculum Compacting*. Mansfield Center, CT: Creative Learning Press, Inc., 1986.

Starko, A., and D. Schack. *Looking for Data in All the Right Places: A Guidebook for Conducting Original Research with Young Investigators*. Mansfield Center, CT: Creative Learning Press, Inc., 1992.

Sternberg, R. J. *The Triarchic Mind: A New Theory of Human Intelligence*. New York, NY: Viking Press, 1988.

Sullivan, C. G. *How to Mentor in the Midst of Change*. Alexandria, VA: Association for Supervision and Curriculum and Development, 1992.

Tannenbaum, A. J., and L. J. Baldwin. "Giftedness and Learning Disabilities: A Paradoxical Combination." *Learning Disabled/Gifted Children: Identification and Programming*. Baltimore, MD: University Park Press, 1983.

The University of Western Ontario. *Student Development Centre.* 2010. www.sdc.uwo.ca/learning/index.html?styles.

Tomlinson, C. A. *How to Differentiate Instruction in Mixed-Ability Classroom.* Alexandria, VA: Association for Supervision and Curriculum Development, 2001.

———. *How to Differentiate Instruction in Mixed-Ability Classrooms.* 2nd ed. Alexandria, VA: Association for Supervision and Curriculum Development, 1999.

———. *The Differentiated Classroom: Responding to the Needs of All Learners.* Alexandria, VA: Association for Supervision and Curriculum Development, 1999.

Torrance, E. P. *Mentor Relationships: How They Aid Creative Achievement, Endure, Change, and Die.* Buffalo, NY: Bearly Ltd., 1984.

Treffinger, D. J. *The Real Problem Solving Handbook.* Sarasota, FL: Center for Creative Learning, Inc., 1994.

———. *Practice Problems for Creative Problem Solving.* Sarasota, FL: Center for Creative Learning, Inc., 1994.

Treffinger, D. J., and P. McEwen. *Fostering Independent Creative Learning: Applying Creative Problem Solving to Independent Learning.* East Aurora, NY: D.O.K. Publishers, 1989.

Treffinger, D. J., M.R. Sortore, M.C. Tallman. *The CPS Evaluation Source Book: Practical Resources For Evaluating Creative Problem Solving Outcomes.* Sarasota, FL: Center for Creative Learning, Inc., 1992.

Treffinger, D. J., M.R. Sortore, M.C. Tallman. *The Creative Problem Solver's Guidebook: A Practical Set of Reproducible "Templates" to Guide Facilitators and Group Participants.* Sarasota, FL: Center for Creative Learning, Inc., 1992.

Treffinger, D. J., R. L. Hohn, J. F. Feldhusen. *Reach Each You Teach II: A Handbook for Teachers.* 2nd ed. East Aurora, NY: DOK Publishers, 1989.

Treffinger, D. J., S. G. Isaksen, and K. B. Dorval. *Creative Problem Solving: An Introduction.* revised. Sarasota, FL: Center for Creative Learning, Inc., 1994.

Tyler, Sydney B. *Just Thinking Program Series.* Montara, CA: Thomas Geale Publications, 1982.

Tyler, Sydney B. *Stretch Think, Program 1.* Montara, CA: Thomas Geale Publications, 1984.

Wassermann, S. *Getting Down to Cases: Learning to Teach With Case Studies.* New York, NY: Teachers College Press, 1993.

Wassermann, S. *Introduction to Case Method Teaching: A Guide to the Galaxy.* New York, NY: Teachers College Press, 1994.

Wassermann, S. *Serious Players in the Primary Classroom: Empowering Children Through Active Learning Experiences.* 2nd ed. New York, NY: Teachers College Press, 1990.

Webb, James, Elizabeth Meckstroth, and Stephanie Tolan. *Guiding the Gifted Child.* Scottsdale, AZ: Great Potential Press Inc., 1982.

Wells, Gordon, Gen Ling Chang-Wells. *Constructing Knowledge Together: Classrooms as Centers of Inquiry and Literacy.* Portsmouth, NH: Heinemann, 1992.

Wiggins, Grant. *Assessing Student Performance: Exploring the Purpose and Limits of Testing.* San Francisco, CA: Josey-Bass, 1993.

Wiggins, Grant. "Standards, Not Standardization: Evoking Quality Student Work." *Educational Leadership* 48, no. 5 (February 1991): 18–25.

Winebrenner, Susan. *Teaching Gifted Kids in the Regular Classroom: Strategies and Techniques Every Teacher Can Use to Meet the Academic Needs of the Gifted and Talented.* Revised, expanded, updated edition. Minneapolis, MN: Free Spirit Publishing Inc., 2001.

Winebrenner, Susan, and Barbara Devlin. *Cluster Grouping Fact Sheet: How to Provide Fulltime Services for Gifted Students on Existing Budgets.* Lombard, IL: Phantom Press, 1994.